MARINE REVIEW.

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New Machinery for Handling Coal and Ore.

With the opening of navigation next spring fifteen car dumping machines for the transfer of soft coal to vessels will be in operation at Lake Erie ports, all the principal shipping points from Toledo to Buffalo being equipped with one or more machines. These fifteen machines represent an investment of at least $525,000, or an average of $35,000 each, and they have all been placed in operation within three years. Seven of them are of McMyler manufacture, five were made by the Brown Hoisting & Conveying Machine Co., two by Webster, Camp & Lane of Akron, and one by the Excelsior Iron Works of Cleveland. Two of the seven McMyler machines are now under construction, one of them to go to the docks of the Cleveland, Lorain & Wheeling Co. at Lorain and the other to go to the Carnegie docks at Conneaut. One of the Webster, Camp & Lane machines is also under construction. It is to be located on the dock of the Buffalo, Rochester & Pittsburg Ry. at Buffalo. The latest design of the McMyler machine, for which contracts have been given for one at Conneaut and one at Lorain, provides for using the same cradle as in the former pattern, but instead of hoisting the cradle and car to the proper height to dump into the pan, the hinged side of the cradle is stationary and the overturning movement is the same as before, but the car empties into a large pan 40 feet in length, with a capacity of 40 tons. This pan has one sloping side and ends and concentrates the coal towards a door in the center of the opposite side from the car. When the pan is in a position for being loaded it is a quarter turned and the sloping side serves as an apron on which the coal passes from the car. As the pan fills the opposite side is lowered until it is in a vertical position, allowing the entire contents of the car to be discharged. The cradle is then turned back and the pan is hoisted by four cables to the necessary height to discharge into a telescope chute. By this plan a saving of about 38 to 40 tons of weight to be hoisted is made and the cars can be shifted while the pan is being emptied, thus saving time and power.

The most important improvement on Lake Erie ore docks in preparation for increased business, aside from the new Carnegie docks at Conneaut, which have been under way for several months past, will be made by M. A. Hanna & Co., who control the Pennsylvania docks at Ashtabula. On these docks the so-called Mutual hoists will be replaced by a 12-rig modern plant that will be designed to unload a ship of the largest type in a single day. The old hoists have been taken down and the contract for the superstructure of the new plant will be let within a day or two. The plant is designed by the dock management and the work is to be entirely under the direction of the dock superintendent, Mr. Geo. B. Raser. Two legs will also be added to the King plant on these docks, making ten legs in all, and fitting this system of rigs also for accommodation of the 450-foot ore carriers. The removal of the so-called Mutual plant on these docks, to make place for a line of hoisting and conveying machines that are expected to unload about 5,000 tons of ore in a day, is another indication of the wonderful progress that has been made in the handling of cargoes on the lakes. When the steamer Cambria, first vessel of the Mutual line of steel ore carriers was built, this machinery was erected with the idea of establishing a system of regular dispatch in the ore trade. The Mutual Transportation Co. became interested in the dock, and it was announced that steel ships were to enter the ore trade with docks built especially to accommodate them. The whole scheme was looked upon as an experiment and some of the older vessel owners shook their heads in doubt. This was only a few years ago, but the Cambria is a back number among the ships of today and the dock that was built for her special accommodation has been torn down to make place for one of probably three times its capacity. On the Cleveland & Pittsburg dock in Cleveland work has been commenced on improvements that will probably involve an expenditure of $50,000, including an addition of four rigs, making twelve in all, for the fast ore plant. This improvement will admit of the modern ore carrier being unloaded at this dock in twelve hours. Several of the wooden sheer legs on this dock will be replaced by steel structures. The frontage of Conneaut ore and coal docks now aggregates 4,400 feet, and the expenditure for docks and machinery at that point up to the present time, according to a statement recently made by Samuel B. Dick of the Pittsburg, Bessemer & Lake Erie road, aggregates $723,572.22.

At ore shipping ports five docks are being rebuilt at an aggregate expense of a little more than $1,000,000. The Duluth & Iron Range road at Two Harbors is rebuilding dock No. 2, at a cost of about $250,000; the Duluth, Mesabi & Northern is extending dock No. 2 at a cost of $200,000; the Chicago & Northwestern, at Ashland, is extending dock No. 1, cost $250,000; the Duluth, Superior & Western's extension is to cost $50,000, and the Chicago & Northwestern at Escanaba is rebuilding dock No. 2 at a cost of $275,000. Mr. H. L. Holden, superintendent of the Two Harbors docks, who was in Cleveland recently, says that the dock which they are rebuilding and lengthening will be the highest dock on the lakes. It will increase the total storage capacity of the five Two Harbors docks to about 130,000 tons, which is equal to the capacity at Escanaba, where there are also five docks. New dimensions of the dock that is to be rebuilt at Escanaba are as follows: Height from water to train deck, 60 feet; width, 50 feet; length, 1,500 feet; capacity, 31,000 gross tons. Besides the dock work now under way by ore-handling roads in the Lake Superior region, enough track construction is being done and enough equipment is being added to make $900,000 additional expenditure. This includes about 1,400 ore cars of the largest size.

Officers of the Brotherton Mining Co., elected recently, are: President, Joseph Sellwood of Duluth; vice-president, Henry Niedecken of Milwaukee; treasurer, W. J. Luther, Streator, Ill.; secretary, Edward Niedecken, Milwaukee.

Lake Freight Outlook.

Ore sales agents of Cleveland who were expecting, with the opening of the present week, a settlement of affairs pertaining to an association for the coming year, have met with conditions that have prevented meetings, and progress with their work is very slow. The condition of the pig iron market is such, however, that there is some question as to the advisability of attempting to sell ore at this time, even in event of an early settlement regarding prices and other matters. There is, therefore, little of immediate interest to vessel owners, in iron ore circles, and several of the Cleveland owners have left the city, to be away for a few weeks, while others are planning on doing so. The combination of Ohio coal producers and coal railways, which has been in process of formation for some time past, is said to be so strong that there will be no breaking away from its binding rules once the scheme is fully carried out, and it is thought that with the agreement one year in force in Ohio, the association will very probably be extended to the Pittsburg and other districts, so as to cover all lake coal; but it is not expected that this amalgamation of coal interests will have any particular bearing on the relations that have existed between coal shippers and lake vessel owners. The newspaper statements about the Ohio association purchasing vessels or having anything to do with the operation of vessels are ridiculous.

A letter from La Salle & Co., summarizing the freight outlook at Duluth, is as follows: "No grain has been chartered on this market for spring shipment. The quantity of wheat in store is 2,250,000 bushels. This wheat is entirely in the hands of Chicago speculators, and the local shippers are unable to purchase it. The opinion seems to be that little or no wheat will be moved from Duluth before June, when it is probable the grain here controlled in Chicago will be rushed forward. It is patent that vessels will have to depend upon coarse grains for early spring cargoes. There will be considerable corn and oats to be moved forward; also, some rye and barley. The total quantity of grain in store at this writing, however, is at least one-third less than a year ago at this time. Although nothing has been done in the way of lumber charters, and the immediate prospects are not flattering, it is most certain there will be great activity in this commodity during the spring and summer. A large quantity of lumber has been carried over from last fall, and logging activities are the most extensive in the history of Duluth. It seems therefore altogether probable that the season of 1898 will witness the largest movement of lumber from this port since its establishment as a lumber center. On the other hand, considerable lumber is going west by rail, and it is probable that before the opening of navigation winter stocks will be diminished by at least 20,000,000 feet. Stocks now on the docks consist largely of box lumber."

Not Bothered with Minimum Freights.

A. N. Moffat of Tacoma, Wash., will be remembered by vessel men of Detroit and other lake cities. He has been in the northwest for a number of years but still retains interest in shipping affairs on the lakes. "We are not bothered with minimum freight rates out here just now," he says in a letter to the Review. "Through your journal I keep fairly well posted on lake freights, and it has occurred to me that a comparison with rates here would interest your readers. Tacoma is practically the same distance from Dyea and Skaguay that Duluth is from Buffalo. The route is land-locked, so that nearly every description of craft, from scow-lighters to ocean-going steamships, engage in the trade. Old ships are dismantled and towed by tugs. The rate on ordinary freight is $13 a ton; on close pressed hay, $20; on lumber, $10 a thousand; on horses, $35 each, and on dogs, $7 each. These high figures do not seem to retard business, as every vessel that is offered is readily snapped up. There are from 4,000 to 5,000 people leaving Puget sound ports every week for the Klondike region. Imagine the dividends that some of these dismantled vessels are paying on lumber at $10 a thousand! Most of them are very old and out of class, and were selling last fall at $1,000 to $8,000 each. Now they are paying for themselves in a trip or two. One great advantage of navigation in Puget sound and in Alaskan waters is the great depth of water that is to be found everywhere. There are few shoals and little necessity for harbor improvements. The average depth in an open roadway from the Pacific is 100 to 150 feet. Money is to be made in the Alaskan trade, in my opinion, for some time to come. The gold excitement in California lasted from 1849 to 1853. It would seem that some of the smaller barges of the lakes could be brought here with pecuniary advantage to their owners. The cost of bringing tugs around from the Atlantic coast is about $9,000, and it is thought that barges could almost bring enough cargo to defray expenses of the voyage. They would find ready sale here should owners decide not to operate them."

The Chapin Mining Co. is about to begin caving in a part of the mine that is crossed by the main line of the Chicago & Northwestern Ry. Arrangements are being made with the railway company to move its tracks. Not long ago, when the Mesabi first came into prominence, the big Chapin mine was not regarded as a highly valuable property, but it was soon found that the discovery of the Mesabi was of special advantage to the Chapin, the ore making the best kind of a mixture with Mesabi ores. Chapin ore never sold as readily as it did during the past year.

Steel ceilings, steel spars, steel cabins, Ellis & Eaves' draft, Serve tubes, corrugated furnaces and feed-water purifiers are all modern features in the steel steamer to be built by the Globe Iron Works Co. of Cleveland for Capt. John Mitchell and others. Competition between the Globe company and the Cleveland Ship Building Co. for this contract caused the successful bidders to make a price lower than has ever been accepted on such a vessel in this country.

Chicago Ship Building Co.'s Machine Shop.

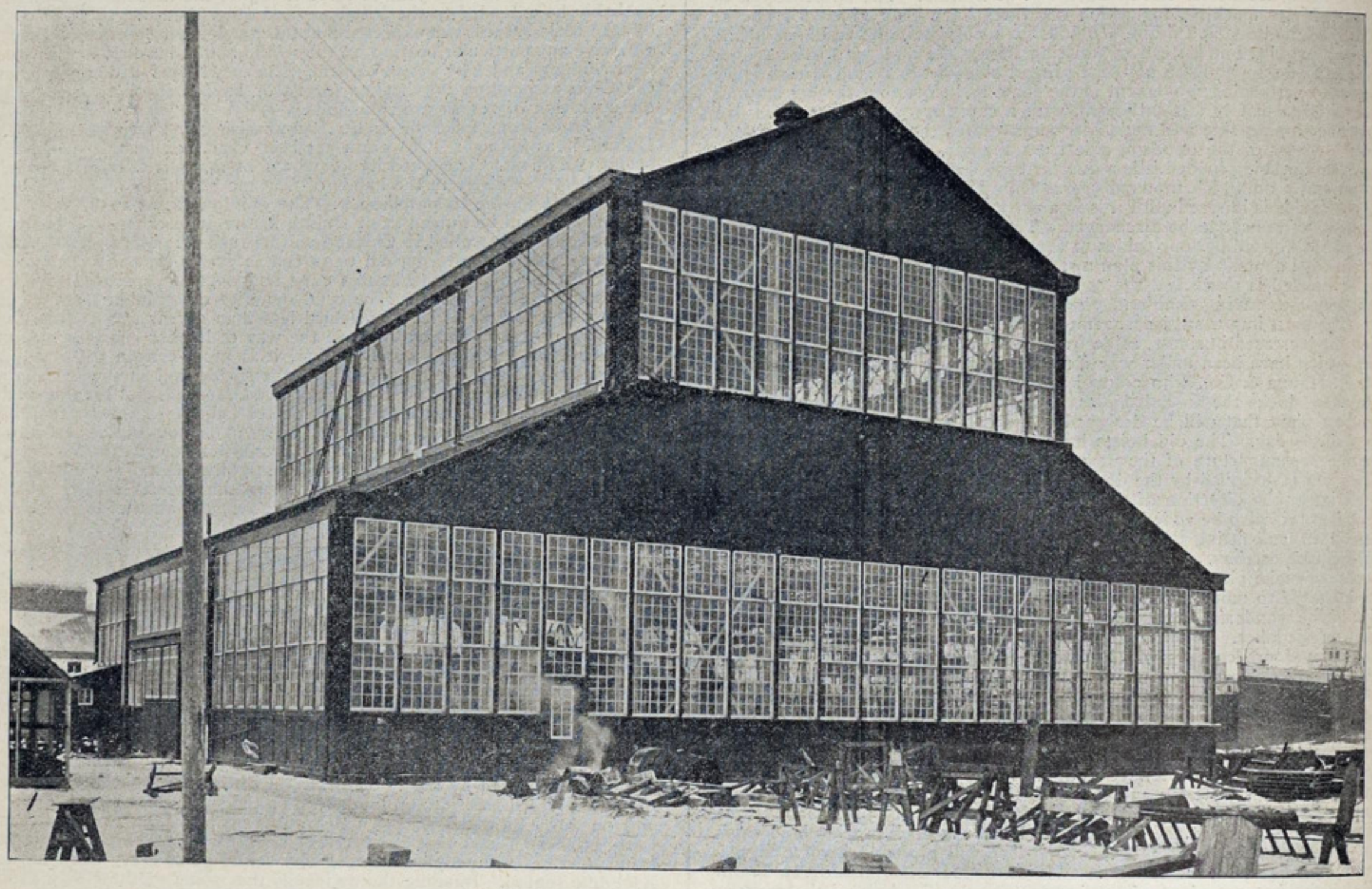
The Review has just succeeded in securing a few photographs of the Chicago Ship Building Co.'s new machine shop, which was completed Nov. 1 last. The views will be admired by everybody who has a knowledge of the advantages of an abundance of light in a works of this kind. The shop was designed by the Wellman-Seaver Engineering Co. of Cleveland to the ideas of Manager W. I. Babcock of the ship yard, and working drawings were furnished, from which the ship yard management built the shop complete with its own force.

The shop consists of a central bay 60 feet wide and 60 feet high under the trusses of the roof, giving 53 feet from floor to crane rail, and two side bays, 30 feet each. The columns supporting the roof and crane girders are 40-foot centers. The upper roof is slate and the side roofs are ¼-inch ribbed glass set in metallic frames. But three bents, or 120 feet in length, of the shop have been built, but the shop can be extended as the necessity arises to 450 feet in length, or additional bays on the saw-tooth roof principle can be added on either side, the iron work being designed for that purpose. The crane girder and columns are built to carry two 25-ton cranes working together, though but one has been installed, and as yet only the brackets provided for the lower girder for a light auxiliary crane.

The shop has no galleries. Its distinguishing features are the amount of unobstructed floor room (there being but four columns in a space 120 feet square) and the great amount of light. In these features it has probably never been equalled. The inside and all the tools are painted white, and on a dark day, from the number of cross reflections, it is actually lighter than it is outside.

The heating arrangement consists of a hot air system with steam coil and fan, installed by the American Blower Co. of Detroit. It is thoroughly satisfactory in every respect, the fan being run very slowly in the coldest weather. The 25-ton electric crane was made by the Brown Hoisting & Conveying Machine Co. of Cleveland. In each side bay is a 5-ton hand crane.

The tools were nearly all furnished by the Niles Tool Works Co. of Hamilton, O., and include a floor boring, drilling and milling machine of special design, which is the largest tool of the kind in the west and one of the largest in the country. The horizontal travel is 16 feet, vertical 10 feet, and the spindle feeds in 6 feet, the bed plate being 20 feet square with an 8-inch circular table having 3 feet power cross feed. The big lathe is 72 inches swing by 25 feet between centers, and there are planers, slotters, radial drill, shapers, small lathes, etc., as usual. The small tools in each bay are served from one line of shafting driven by a motor at the end. The floor boring machine and big lathe have separate motors attached. This leaves the main floor of the shop entirely clear of belts, etc. All motors used are supplied by the Elwell-Parker Electric Co. of Cleveland, who also furnished the generator which runs them and the motors for the rest of the plant, which was changed to motor drive in all departments on the central power house system when this shop was finished.



CHICAGO SHIP BUILDING CO.'S NEW MACHINE SHOP.

REVENUE CUTTER OFFICIALS.

NO COMPLIMENTS FOR THEM FROM THE SHIP MASTERS — A FULL ACCOUNT OF THE MILWAUKEE CONVENTION.

Milwaukee, Wis., Feb. 2.—The last issue of the Review contained the names of new officers of the Grand Lodge, Ship Masters' Association, as well as a statement of membership, finances, etc. But the delegates to this supreme body, which represents the entire lakes, did not spend the best part of a week in convention here attending simply to the mutual benefit features of their organization. They had a great deal to say of the relations between ship masters and government officials and discussed numerous subjects along that line. During several years past the young officials of the revenue cutter service have been attended by such an air of importance when visiting lake ships that they are not in the best of favor with the captains. They are said to have often approached the master of a 5,000-ton freight steamer with a greater show of dignity than would be expected from a French admiral. They have caused some of the ship masters to make inquiry as to the cause for spending more than half a million dollars for three new revenue cutters on the lakes, and this inquiry may not prove of special advantage to the service, which seems to have no great claims for existence on these waters, unless it is to provide salaries for a small army of employees that has been constantly increased, although actual duties have grown less each year. In view of this feeling there was not much delay in having the convention approve the following clause in a letter from the Chicago lodge:

"We respectfully call the attention of the grand lodge to the unbecoming, unkind and overbearing manner usually assumed by the official known on United States revenue cutters as the boarding officer; to his manner of insisting upon immediate compliance with his will and wishes, without regard for any duty that may require the attention of the officers of the boat at the time of his coming aboard, and without regard also for the necessity of immediate attention being given to such duty. We further protest against his haughty and unnecessary method of lodging complaint with collectors of customs against the vessels for the seeming neglect of duty in non-essentials, instead of pointing out and recommending that such matters, often of a trivial nature, be given attention by officers of the ship. There are many cases in which a statement from him to the effect that he would make complaint if a rule was not complied with immediately would answer the intent of the law. He should act the part of a monitor and not that of a dictator. We respectfully request that these suggestions be given your attention."

The sentiment expressed in the foregoing paragraph will be conveyed to Washington authorities. The Chicago lodge also suggested that executive officers of the supreme body take legal advice on the question of securing legislation that will enable officers of merchant vessels, either masters, pilots or engineers, to vote at federal elections, no matter in what part of the United States they may find themselves on election day. The idea is to have the government licenses of such officers serve as a guarantee of their right to vote, and to provide severe penalties, including confiscation of license, for abuse of the privilege. It was further suggested by the Chicago lodge that the association work in harmony with

the Lake Carriers' Association in an effort to procure telephone communication between the Sault and the Dyke in St. Mary's river, or the lower end of Hay Lake, so that masters may be informed of the depth of water at the Dyke and also of any obstructions in the river channels. All of these suggestions met with approval and will be carried out as far as possible.

Among other resolutions adopted by the convention were the following: Requesting the light-house officials to change the Milwaukee north point light from a white flash to a white and red flash, similar to the light now on Chicago breakwater; urging members to patronize as far as possible advertisers in the directory; requesting the Lake Carriers' Association to use its influence in trying to have the gas buoy on Southeast point, Lake Erie, replaced by a light-ship, and to have the period of flash at Whitefish point light increased from five to ten seconds; favoring the appointment of a deputy collector of customs to be stationed in the canal office at Sault Ste. Marie; urging the establishment of a light-ship at the station now occupied by a gas buoy on Lansing shoal, Lake Michigan; requesting the weather bureau to give more attention to Sunday and holiday service during the season of navigation; requesting the Lake Carriers' Association to assist vessel interests of Lake Ontario in securing gas buoys and other aids to navigation for which they have made application. The convention decided not to take part in urging improvements for one locality as against another, and therefore took no action on a resolution asking congress to make appropriations for the immediate improvement of the Portage Lake harbor of refuge. A resolution recommending the passage of a law that would give the ship master, as well as members of the crew, a lien on vessel and freight for services was also laid on the table, but hearty endorsement was given to a long series of resolutions urging congress to establish a department of commerce with a cabinet representative.

The following report of the memorial committee is short but appropriate: "The following named brothers have made final trips on earth and we hope and trust that each has found a safe anchorage in a heaven of eternal rest: Wm. G. Turner, James Fraser, L. W. Cook, Robert Moore, J. S. Lawton, J. W. Farwell, J. W. Martin, Peter Cromley and Thomas Cowan."

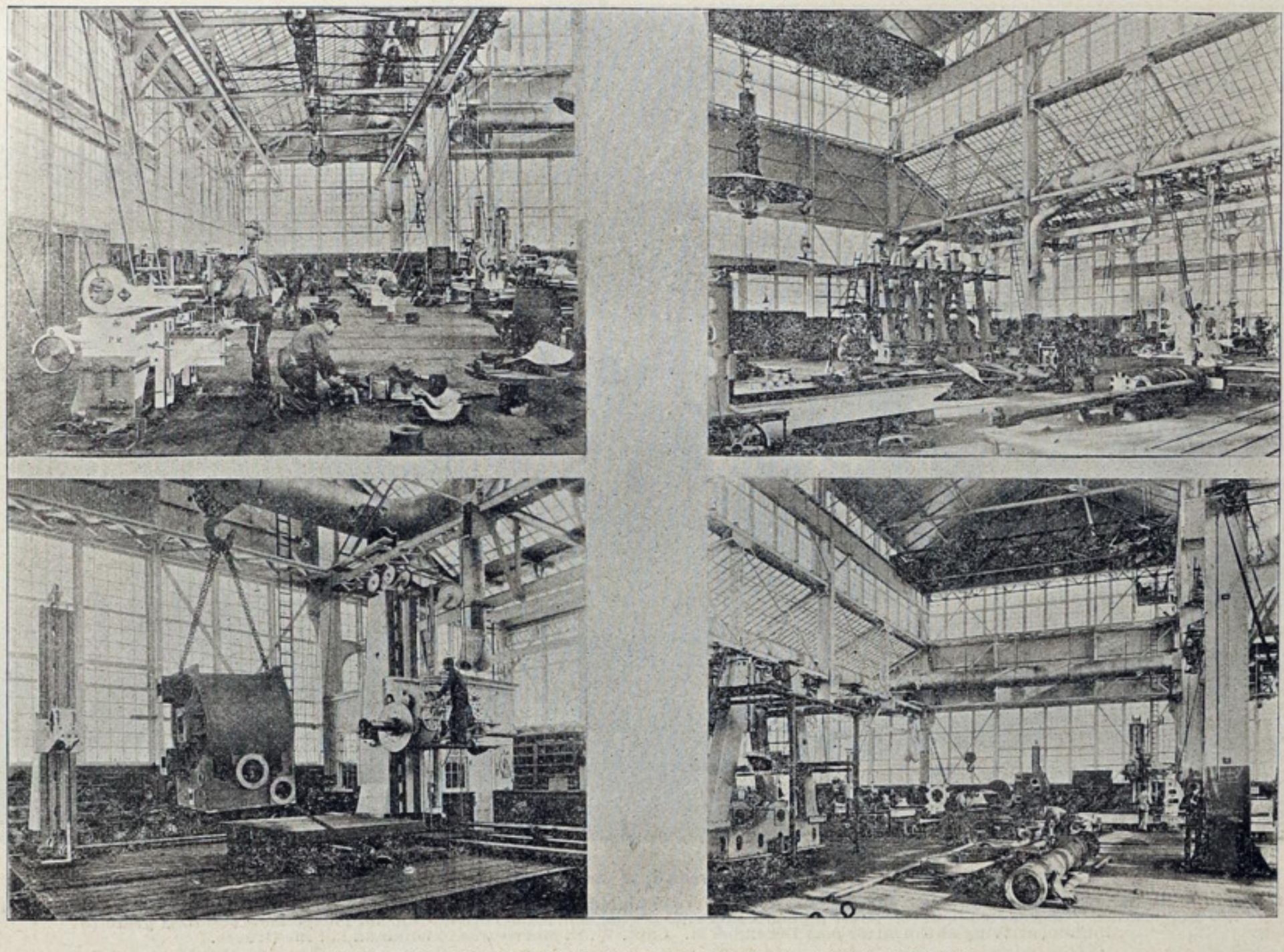
Membership of the different lodges on Dec. 31, 1897, was as follows: Buffalo, 86; Port Huron, 51; Chicago, 68; Cleveland, 142; Bay City, 23; Milwaukee, 44; Detroit, 74; Marine City, 8; Toledo, 20; total, 516. Representatives at the convention, in addition to the grand officers of the past year, were as follows: Buffalo, Alex. Clark; Port Huron, H. Zealand; Chicago, John Jenks; Cleveland, Richard Neville; Bay City, J. S. McNeil; Milwaukee, H. Leisk; Detroit, H. C. McCallum; Marine City, J. A. Ward; Toledo, Homer Durand.

It was decided that the convention of January, 1899, will be held in Toledo. In the meantime, Secretary W. A. Collier of Cleveland, upon whom devolves the great bulk of the work of the association, will give attention to the publication of the annual directory and to the establishment of a new lodge or two that are contemplated. Capt. J. P. Partridge of Charlevoix, Mich., is interested in the formation of a lodge at that point and will be assisted by the secretary and the new president, Capt. Rice.

Ship Yard Improvements at West Superior.

West Superior, Wis., Feb. 2.—With the completion of most of the improvements and additions that have been under way for some time past at the ship yard of the American Steel Barge Co., a circular letter is being sent out to leading ship owners. The most important announcement has reference to the second dry dock, work on which has been under way for some time past, and which, when completed, will be the largest on the lakes, capable of docking two large vessels at the same time. The length of this dock will be 575 feet on keel blocks, 64 feet wide at bottom, and 118 feet wide at top; the gate will be 70 feet wide, and there will be 20 feet of water over the mitre sill. A fully equipped punch shop will be erected between the dry docks, which will greatly facilitate all repairs and very materially shorten the number of "lay days." The following summary of other improvements is also contained in the circular letter:

"A brick machine shop, 154 feet by 85 feet, has just been completed and fitted throughout with modern machine tools and appliances for the repairing and building of all kinds of engines. A large electrical generating plant has been installed for the operation of the entire plant, including the cantilever Gantry crane recently erected between building slips. We also have a complete installation of pneumatic tools, connected up throughout the ship yard and dry dock, supplied with power from a very large Ingersoll-Sargeant compressor; and we are also equipped with steam riveters, rivet and bolt-making machine, beam benders, etc. Electric lighting apparatus for the illumination of our ship building and dry dock plants, which was also recently installed, is of the most improved kind. You will observe by these changes that we are placing ourselves in a position to meet all demands, both in new construction and marine repairs of all kinds, and we are also prepared to handle other steel structural work, such as bridges, dock fittings, etc. When improvements now under way are finished, we will have, without doubt, one of the most complete plants of its kind in the United States."



CHICAGO SHIP BUILDING CO.'S NEW MACHINE SHOP—INTERIOR VIEWS.

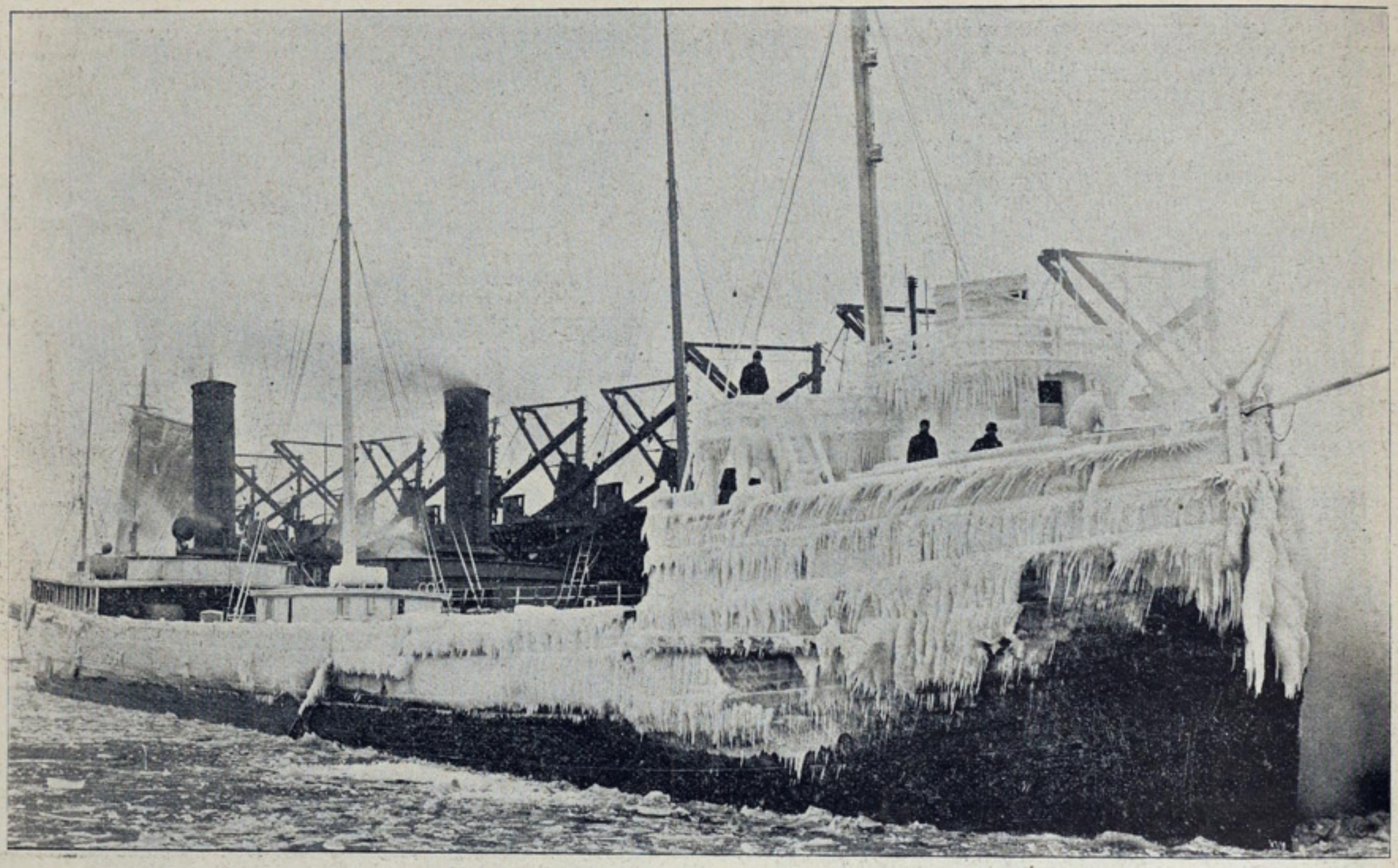
Reports of the Lake Carriers' Association.

Secretary Keep of the Lake Carriers' Association is about to issue from his office in Buffalo a pamphlet that will show the scope of the association and at the same time prove quite valuable for reference. It will contain a list of officers, members of the board of managers and members of standing committees, as well as the last annual report of the board of managers and the treasurer. These reports review the work of the association during 1897 and convey a general idea of what is being done by the organization from year to year. The pamphlet will also contain a list of names, addresses and tonnage of members, together with an alphabetical list of vessels in the association.

Charts of the lakes made by the British admiralty; charts made by the United States hydrographic office, navy department, and charts made by the engineer corps of the United States army are all kept in stock by the Marine Review, 409 Perry-Payne building. All of them are corrected to date, and prices represent simply the cost of paper and press work.

General Use of Bilge Keels.

The general tendency toward the use of bilge keels on Atlantic liners would seem to establish their value, especially in passenger ships, where any device intended to prevent rolling, or lead to the comfort of passengers in any way, is appreciated. The Cunard line, which recently fitted the Aurania with bilge keels, has just done the same with the Campania, and the Lucania is also to have them put on. The White Star line proposes to begin at once placing them on its cattle steamers as each arrives at Liverpool, and it is understood that they may also be put upon the fast steamers of the line. The International Navigation Co. will fit its Red Star steamers Kensington and Southwark in the same way. The North German Lloyd liner Spree, which is now being lengthened on the other side will have bilge keels when she is again launched. All of the four new steamers of what is known as the company's Barbarossa fleet, the Barbarossa, the Bremen, the Konigin Luise and the Kaiser Friedrich der Grosse, have the improvement, as have also the Kaiser Wilhelm der Grosse and the Kaiser Friedrich. The Hamburg-American line steamers Auguste Victoria, Columbia, Patria, Phœnicia, Palatia and Astoria, are also fitted with bilge keels, as were the Prussia and Persia, which were recently sold. The five new steamers of the Wilsons & Furness-Leyland line, three of which are already in service, are also equipped with them. The Atlantic Transport line's fleet of seven steamers are similarly fitted, this line being, it is claimed, the first to adopt the device, and the only line out of all whose steamers have it. The new Holland-American liner Rotterdam has these keels, as well as the Staatendam and Rhyndam, now building; while the Allan-State line will place them on all its steamers which do not already have them. The main purpose of bilge keels is to prevent excessive rolling. They do not interfere with speed, it is claimed, and can be placed upon a vessel after she is built with comparatively little difficulty. They are considered especially valuable when steamers have light cargoes and are well out of the water and consequently more exposed to wind and waves.



Wooden steamer M. B. Grover of Cleveland, as she appeared at Duluth, Dec. 2, 1897.

When this picture was taken the Grover had just completed a run of 48 hours up Lake Superior from Sault Ste Marie against a north-west wind, with the temperature 14 degrees below zero. After unloading a cargo of coal, she loaded ore for South Chicago and then took grain to Buffalo, arriving at the latter port December 21. Capt. W. E. Morris was in command of the Grover.

A Vote of Thanks at Milwaukee.

Capt. F. C. Starke of Milwaukee lodge No. 6, Ship Masters' Association, sends the Review the following note from the proceedings of the lodge, dated Jan. 31:

"In regular session assembled, we wish to express our hearty thanks to our numerous friends and patrons, who so ably assisted us, socially and financially in entertaining the officers and delegates to the grand lodge."

This resolution is signed by Capt. Henry Leisk, president of the Milwaukee lodge.

A note from the Roberts Safety Water Tube Boiler Co. announces that the works at Red Bank, N. J., now has 40,000 horse power of boilers under construction and is refusing orders for delivery before Aug. 1. The works are still in operation night and day, having just received additional orders for about 3,000 horse power of boilers for steamers building by Lewis Nixon at the Crescent Ship Yard, Elizabethport, N. J., for a boat building at John E. Thropp's yard, Trenton, N. J., and two boilers for James Beggs & Co., as well as a donkey boiler for the steamship Farnwell; also a boiler for H. R. Stickney of Portland, Me., this latter order being the second one from Mr. Stickney within two weeks.

Around the Lakes.

Ozias Williams Shipman, who for years has been known as a leading coal merchant of Detroit, died at his home in that city a few days ago.

All of last year's officers and directors of the Goodrich Transportation Co. were re-elected at the annual meeting held in Milwaukee, Tuesday.

E. W. Heath of Benton Harbor, Mich., will build the 99-foot wooden hull for the harbor tug, on which the Milwaukee Tug Boat Co. has been figuring for several weeks past.

John Drawe, M. Sicken and others of Marine City have sold the steamer Santa Maria to the Hines Lumber Co. of Chicago for $42,700 and the small steamer S. K. Martin in trade.

The Marine Review will mail lake charts to any address. We also make a specialty of mounting them on linen and binding the edges with tape, so that they may be used daily for years without injury.

The Dry Dock Engine Works of Detroit certainly has its share of business for the winter when jobs like the building of a boiler for the tug A. W. Colton are re-let to the Cleveland Ship Building Co.

The necessary repairs on the light-house tender Dahlia will be made by the Chicago Ship Building Co., at an estimated cost of $9,400. No formal contract has been made. The work is to be done by day labor.

Capt. Geo. Bell, who has been employed for sixteen years in sailing vessels of the Gilchrist fleet, is said to have accepted employment with Mr. A. B. Wolvin of Duluth, and it is thought he will be given command of the steel steamer Zenith City.

As had been expected, the wages of miners employed at the Norrie and Pabst mines (Carnegie properties) on the Gogebic range were increased about 10 per cent. on the 1st inst. This will prompt an increase of wages at other mines on the Gogebic.

The marine engineers who met in Washington recently protested against the closing of offices of deputy collectors of customs at Bay City and Saginaw during the winter, and it is now announced that the order closing these offices will be withdrawn in the case of Bay City.

With two steel tugs under construction, one for the Maytham line and one for Hickler Bros., and with extensive alterations being made in the Union line steamers Owego and Chemung, as well as a rebuild of the steamer Tioga, the Union Dry Dock Co. of Buffalo is quite well provided with work for the winter.

The announcement that the management of the Cleveland & Buffalo Transit Co. contemplates giving the name City of Erie to the new side-wheel steamer building at Detroit was not favorably received in Cleveland, as it was thought the boat would be named Forest City. The object in honoring Erie in the matter is probably prompted by a desire to secure business at that point. The question of name will be finally decided at a meeting of the new board of directors, to be held in Cleveland Saturday.

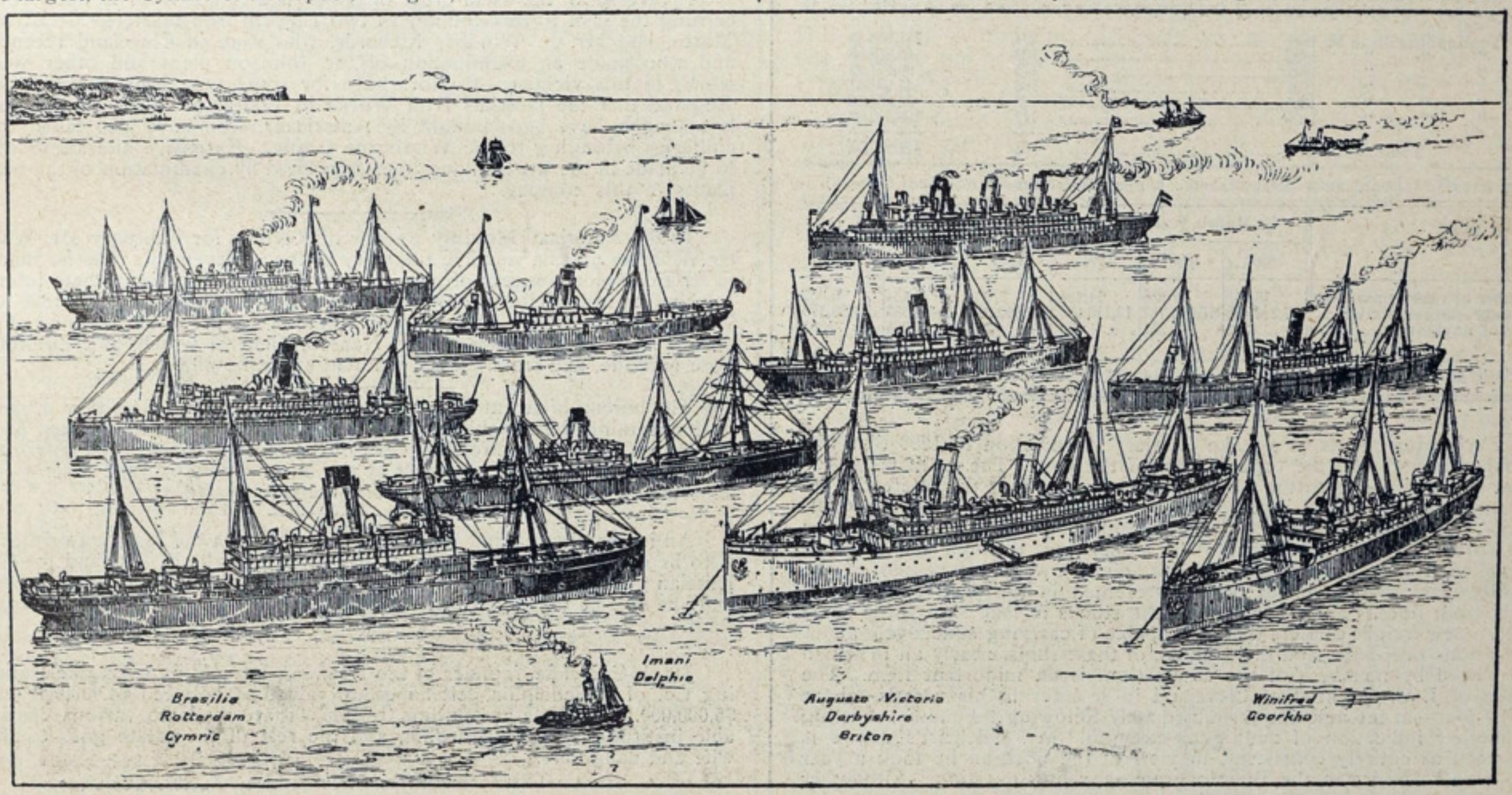
Appropriate resolutions on the death of their late associate, Wm. H. Lawrence, were recently adopted by members of the Cleveland branch, Marine Engineers' Beneficial Association. The engineers resolved "that it is but a just tribute to the memory of Mr. Lawrence to say that, in regretting his removal from our midst, we mourn for one who was in every way worthy of respect and esteem."

Output of the Greatest Ship Yard in the World.

The engraving on this page conveys an idea of the enormous output of a single British ship yard, that of Harland & Wolff, Belfast, Ireland, in 1897. There are ten steel steamers, the small craft being introduced simply to give a little variety to the picture. The total tonnage is 84,240, or an average of over 8,000 tons each. Following are the names of the vessels, port of registry, tonnage and horse power:

Name and port of registry.	Gross tons register.	Indicated horse power.
Delphic, Liverpool	8,273	2,750
Goorkha, Southampton	6,287	2,750
Rotterdam, Rotterdam	8,302	5,250
Briton, Southampton	10,248	10,000
Derbyshire, Liverpool	6,636	4,300
Cymric, Liverpool	12,340	6,700
Brasilia, Hamburg	11,100	3,800
Winifreda, Liverpool	7,020	4,900
Imani, Liverpool	4,582	2,700
Monmouth, London	7,950	2,700
Auguste Victoria, lengthened 61 feet, increased tonnage	1,502	—
	84,240	45,850

It will be noted that only one of these steamers was under 5,000 tons; all the rest were over 6,000 tons, and three were each over 10,000 tons, the largest, the Cymric of Liverpool, being 12,340 tons. In 1885 the output of this firm was about 20,000 tons; in 1890 it was 48,600 tons; in 1895 it rose to 58,000 tons; in 1896 it shot up to 81,000 tons; and now for 1897 it has risen to 84,240 tons. The engraving is from the Engineer of London.



ONE YEAR'S OUTPUT FROM THE WORLD'S GREATEST SHIPYARD.

There are some vessel owners who are of the opinion that the shoveling charge for unloading oats should not be equal to the charge of $2.95 a thousand that is made for other grain at Buffalo, but as the shoveling question has been settled for the coming season, it is not probable that any reduction can be made on oats, no matter what the effort may be in that direction. Mr. John Gordon of the Great Lakes Steamship Co. informs the Review that the cargo of oats loaded by the Wilson line steamer Carnegie at Manitowoc, and for which his company issued bills of lading on the 2d inst., aggregated 332,100. This is the largest cargo of oats loaded by a lake vessel. Unloading charges on this cargo will be very much higher than the charges that would be made for wheat or corn. They will exceed by $200 the largest charges that the Carnegie has ever paid on a single cargo of ore.

Wm. Berriman of Buffalo has sold his interest in the steamers Brazil and America to the Maythams, and it is therefore announced that these steamers and the steamer Maytham, which were built by what was known as the Kelderhouse syndicate, will again be under the old management hereafter. Capt. Berriman was controlling owner of the Brazil and had a large interest in the America.

Irving Cox of the New York yacht-building firm of Gardner & Cox has undertaken new duties in connection with the management of the Roach ship yard, Chester, Pa., but will not give up his interest in the New York firm.

Electric plants for the three Rockefeller ships building at the works of F. W. Wheeler & Co., West Bay City, will be furnished by the General Electric Co.

Federal Control of the Erie Canal.

The introduction of two bills in congress providing for federal control of the Erie canal will tend to still further direct attention to the recent report of the war department, prepared by United States Engineer Thomas W. Symons of Buffalo, favoring an enlarged Erie canal as against the proposed ship-canal from the lakes to Atlantic tidewater. This report is a very strong argument against the enormous expenditure that would be involved in the proposed ship-canal. Some of the newspapers of New York state that are opposed to the idea of having the government lease or purchase the Erie canal point to the decline of commerce on the Mississippi river under federal control. In answer to this criticism Major Symons says:

"Without posing as an advocate for the federal control of the Erie canal, for I would vastly prefer to see it remain under the control of the state if the state will improve it and develop its usefulness, I cannot but regard that argument as very unfair. It is true that commerce has declined greatly on the Mississippi river, but what is the reason? Probably 99 per cent. of the decline is due to the fact that the great river does not run in the right direction. It runs at right angles to the great world stream of commerce, which flows from west to east and vice versa. Suppose that this river, instead of flowing to the Gulf of Mexico, had seen fit to flow to the Atlantic somewhere in the vicinity of New York or Baltimore, can anyone doubt that it would have carried a commerce hundreds of times greater than it does now and greater than that carried on any long river in the world? A much fairer comparison between federal and state control of waterways is one that might be instituted between the government control of the great lakes and the interlake channels and the New York state control of the Erie canal. Under federal control the through lake routes have constantly increased in capacity for many years until the available draft has increased from 8 feet to 18 feet, and the tonnage of vessels from 400 or 500 to 6,000 and over. At Sault Ste. Marie the government has not waited until its structures should be overworked or outclassed, but has added lock after lock in anticipation of increase in the size of vessels and the amount of commerce, and at a cost of many millions of dollars. It is under the fostering care of the general government that the lake commerce has increased to its present enormous proportions, which is well illustrated by the growth of the grain trade at Buffalo. This amounted in 1836 to about 1,250,000 bushels, and in 1897 to over 260,000,000 bushels. How does this development of lake commerce and the part taken by the government in opening up, increasing and maintaining the capacity of the through channels between the great lakes compare with the development of commerce and the part taken by the state of New York in caring for, increasing and maintaining its link in the chain, the Erie canal? Surely, the answer must cover the United States with glory and the state of New York with shame, for while the United States has kept well in advance of actual existing demands, the state of New York has lagged behind them, and while the commerce through the channels kept up by the United States has increased enormously, that through the channel kept up by the state of New York has diminished. While I hope the state will prosecute with all vigor and complete the work which it has undertaken on the Erie canal, I must protest against unfair comparisons, the effect of which would be to throw discredit upon the magnificent and highly successful works which have been done throughout the country by the general government in the interests of commerce."

The Review acknowledges the receipt of an invitation and ticket for the twenty-third annual reception and ball of M. E. B. A. No. 4 of Chicago, which will take place at Medinah Temple on the evening of Feb. 2.

MARINE REVIEW

DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, Ohio, by John M. Mulrooney and F. M. Barton.

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The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels	1,792	924,630.51
Sailing vessels and barges	1,125	354,327.60
Canal boats	416	45,109.47
Total	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30.	1891	204	111,856 45
" " "	1892	169	45,968.98
" " "	1893	175	99,271.24
" " "	1894	106	41,984.61
" " "	1895	93	36,352.70
" " "	1896	117	108,782.38
Total		864	444,216.36

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (*From Official Reports of Canal Officers.*)

	St.Mary's Falls Canals.			Suez Canal.		
	1896*	1895*	1894	1896	1895	1894
Number of vessel passages	18,615	17,956	14,491	3,409	3,434	3,352
Tonnage, net registered	17,219,418	16,806,781	13,110,366	8,560,284	8,448,383	8,039,175
Days of navigation	232	231	234	365	365	365

*1895 and 1896 figures include traffic of Canadian canal at Sault Ste. Marie.

Everything points to a Lake Carriers' Association in 1898 that will be far stronger than the organization of the past. The main cause for great expectations as to the future of the association is the interest in its advancement shown by representatives of the big vessel-owning companies. It is also announced that President Dunham will undertake the work of trying to bring into the association, through such inducements as it may be possible to offer, many owners of vessels of the smaller class that have not been represented in the past, even to the harbor tug lines. There are also on the stocks in lake ship yards some sixteen new freight carriers that are capable of carrying collectively about 80,000 tons of freight, and the tonnage of these ships, nearly all of which are owned by members of the association, is an important item. The action of J. C. Gilchrist of Cleveland in re-entering his vessels—about 25,000 tons—in the association immediately following the annual meeting is another indication of additional strength. Mr. Gilchrist's action is regarded as entirely consistent, in view of the position he took a year ago with reference to the Buffalo grain-shoveling question. Altogether it would not be surprising to find the membership of the association increased to 775,000 registered tons in 1898. Managers of vessels that do not derive direct benefit from the operations of the shipping offices are becoming acquainted with the work of the association aside from these agencies, which are not by any means of most importance. Less than $9,000 per annum of the association's funds is required to maintain and operate these shipping offices, and the cost for each man put aboard vessels in 1897 was a little less than 68 cents.

Four or five canal investigation bills have been introduced in the New York legislature as a result of the difficulties that have arisen over the canal improvement work. The bill that will probably be adopted is known as Governor Black's bill. It provides for a commission to consist of not less than seven citizens of the state, to be appointed by the governor within twenty days after the enactment of the bill. They are to examine and report concerning the work already done in connection with the deepening of the Erie, Champlain and Oswego canals under the law of 1895; the contracts made for such improvement, and whether such contracts were properly made; the amount of money actually expended and whether such expenditures were proper; the proportion of the improvement included in contracts already made; the portions of either canal not included in any contract; the amount which will be required to complete the improvement of such canals in accordance with the plans and specifications of the superintendent of public works or the state engineer and surveyor. The report is to be made to the governor in writing on or before June 1, 1898, to be transmitted to the legislature at the opening of the next session. The governor may extend the time, but not beyond July 1, 1898. The commission is to have all the powers possessed by a legislative committee, and may employ counsel, engineers and such other assistants as may be deemed necessary. An appropriation of $10,000 is to be made for the commission.

Revenue cutters of the lakes have occasionally rendered assistance to vessels in distress, but the service has been of little account, as the revenue cutters themselves were very old and were usually found in a harbor of refuge or in the rivers excepting in fine weather. They were unfitted to be of any service to a disabled vessel in heavy weather. But now that there will be three new revenue cutters on the lakes, considerable interest will attend the outcome of an order issued from the treasury department under date of Jan. 18. The order is issued to commanding officers of revenue vessels and instructs them, upon learning of disasters to vessels, whether within or without the cruising limits of their command, to proceed at once and without further orders to the relief of such vessels, whether stranded or otherwise in distress. Any information locating definitely such disasters is to be regarded as sufficient to demand aid from the cutters. If this order is carried out the new cutters can be of great assistance to lake commerce in cases of emergency without undertaking what may be regarded as the work of wrecking companies.

Messrs. Miller, Bull & Knowlton of New York, who have placed an order with the Bath Iron Works, Bath, Me., for a steamer of the British tramp kind, the first to be built in this country, are meeting with considerable severe criticism on account of a circular they sent out soliciting subscriptions for shares in the ship. The circular makes tempting promises of dividends from the new ship, which is to carry about 3,800 tons and cost, ready for sea, about $175,000. Fairplay of London, a journal that has vigorously opposed in England this method of so-called touting for shareholders for single steamship companies, presents figures intended to show that a ship identical with the one to be built at the Bath works can be built in England according to rates now offered by first-class firms for $125,000, or $50,000 lower than the price stated in the circular of the New York firm.

A reversal of the usual order of things is a rumor from London concerning the visit to this country of two English iron masters, Mr. E. P. Martin and Mr. E. Windsor Richards, who were in Cleveland recently and who made an examination of the Johnson plant and other steel works in this vicinity. Rumors have for some time been prevalent in England that the Dowlais Iron Works in Wales, of which Mr. Martin is manager, have been bought by Americans, who have also taken the collieries belonging to the Wimborne family. Extensive alterations are to be made in the works along lines suggested by examination of the best plants in this country.

In the American Monthly Review of Reviews for February Mr. Walter Wellman gives a valuable summary of the achievements thus far made in Arctic exploration and of plans now maturing for the immediate future—including Mr. Wellman's own expedition projected for the years 1898-99. This is followed by a collection of opinions on the value of polar discovery from such experts as Dr. Nansen, General Greely and Commodore Melville, and from several eminent scientific men.

The bureau of steam engineering, navy department, is to take a hand in determining the suitability of the steam turbine for torpedo boat propulsion. Commodore Melville, chief of the bureau, has secured authority from Secretary Long to conduct at the Brooklyn navy yard a series of experiments with a steam turbine of American design.

An ice-breaker having three times the power of the Mackinaw vessels is to be constructed at the famous Armstrong works in England for the Russian government. The vessel will have engines of 10,000 horse power and she will be employed in keeping open the Gulf of Finland at Cronstadt.

Jacob C. Neafie, founder of the Neafie & Levy Ship & Engine Building Co. of Philadelphia, left an estate valued at between $4,000,000 and $5,000,000. Bequests amounting to $145,000 are made to various charitable institutions in Philadlephia, and the rest of the estate goes to the wife and daughters.

The urgency deficiency bill contains an appropriation of $50,000 for the lame dry dock at the New York navy yard, which has caused the government so much trouble.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, Jan. 29, 1898:

	Wheat, bushels.	Corn, bushels.
Chicago	9,830,000	15,466,000
Duluth	2,210,000	1,978,000
Milwaukee	129,000	123,000
Detroit	83,000	27,000
Toledo	215,000	727,000
Buffalo	1,273,000	2,765,000
	13,740,000	21,086,000

As compared with a week ago, the above figures show, at the several points named, a decrease of 210,000 bushels of wheat and 83,000 bushels of corn. On the same date there was afloat at Chicago 1,415,000 bushels of wheat, 6,071,000 bushels of corn, 232,000 bushels of oats, 89,000 bushels of rye and 93,000 bushels of barley; at Buffalo 559,000 bushels of wheat and 84,000 bushels of rye; and at Milwaukee 448,000 bushels of corn.

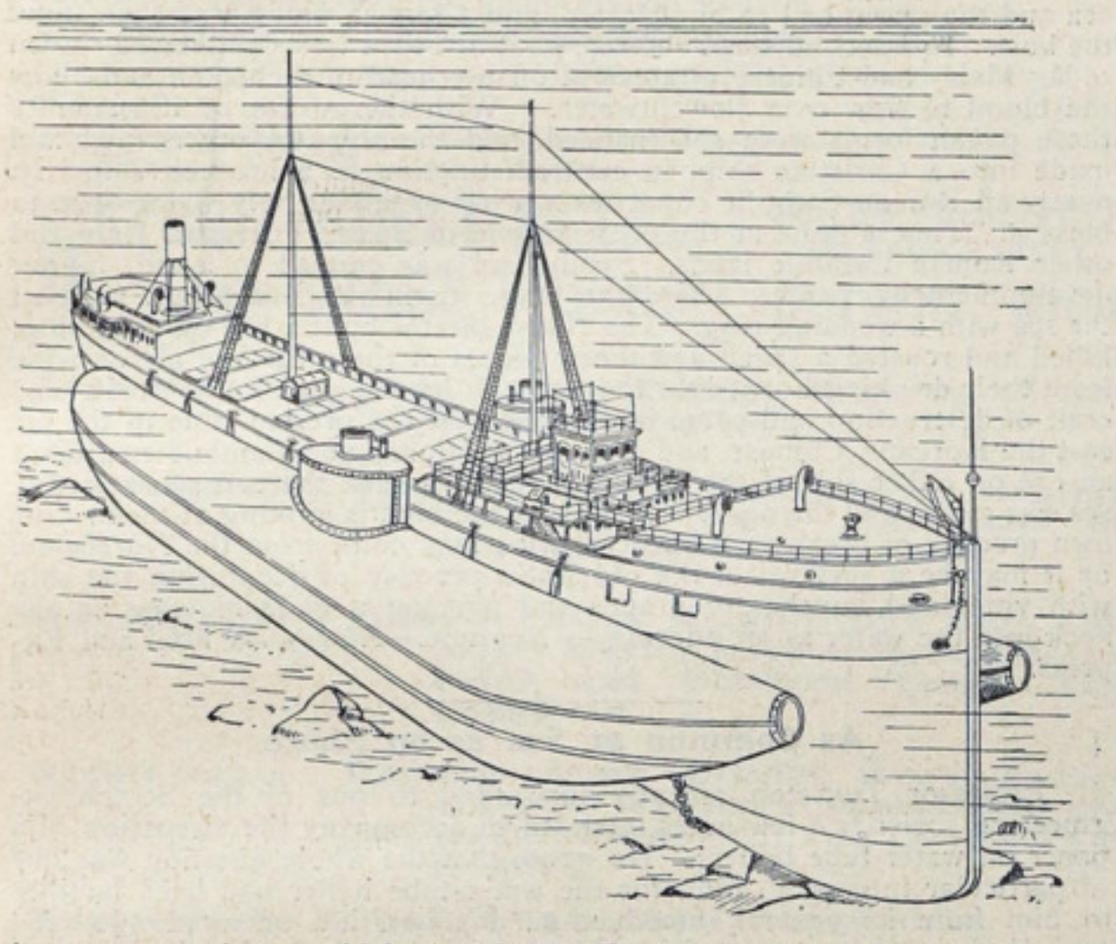
Officials of the International Navigation Co., Philadelphia, announce that the five ships that are being fitted out at the Cramp ship yard for Alaskan trade (Ohio, Indiana, Illinois, Pennsylvania and Connemaugh) will be operated by the Empire Transportation Co., which will be controlled by the International company, and of which Mr. C. A. Griscom of the International company is president. It is said that plans are being prepared by the International company for larger steamers to replace the five boats withdrawn from the north Atlantic service.

The position of assistant local inspector of boilers at Milwaukee, rendered vacant by the resignation of David Lanagan last fall, has not yet been filled.

For Raising Sunken Vessels.

N. J. Boylan, manager of the steamboat fuel department of the Ohio & Pennsylvania Coal Co., Cleveland, is interested with Albert H. Wolf of West Dover, O., in letters patent secured some time ago by Mr. Wolf on appliances designed to raise sunken vessels. Mr. Wolf's patent claims, and his plans for a wrecking plant that would be especially suited to the lakes, are best explained by reference to the accompanying engraving and by a talk with him on the subject.

"My idea is to construct," he says, "at least two pontoons or floats of design similar to the whaleback barges and to have them of large dimensions, say 300 by 45 by 32 feet, shored and strengthened to meet



the pressures that would be involved. These pontoons, after being sunk and air forced into them to an extent sufficient to displace their full water capacity, would lift 28,000 tons from a depth of 100 feet. This is a weight greater, of course, than the combined weight of any ship and cargo now thought of on the lakes. In attaching these pontoons to a wreck, the ordinary means of employing divers and using chains or cables under the wreck would be followed, but I would have the pontoons provided with a system of valves, say one on each end and one on each side amidships, through which, from a suitable air compressor plant on the surface, the water could be forced out. Then I would also have the pontoons provided with an interior chamber, which would be free of water at all times, and from which the valves could be operated, especially after the wreck had been brought to the surface, when it might be found necessary to open or close certain valves in order to bring both the pontoons and the wreck to an even, upright position. The patent also provides for a connection by means of sectional pipe between this air chamber and the surface, if it should be found necessary at any time to have an operator go below with the pontoon. The dome of the pontoon, shown in the engraving, is also covered by patent, as it is intended to be of special advantage, not only in steadying the pontoon itself but also in handling the wreck after reaching the surface."

Messrs. Wolf and Boylan say they appreciate the necessity of enlisting considerable capital in support of an undertaking of this kind, and they will make concessions in patent rights in order to do so, or will sell them outright.

Floating Docks.

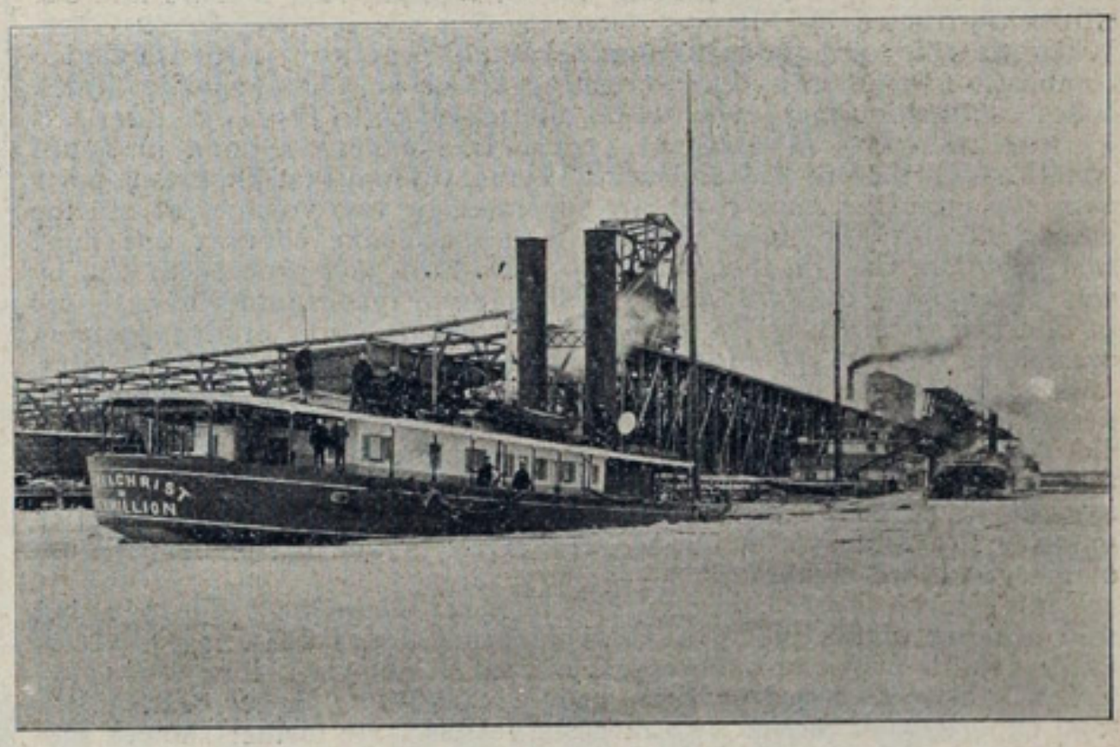
Some interesting notes regarding the early history of dry docks are contained in an article on floating docks contributed to Cassier's Magazine by Sidney F. Staples. "In early days ships of any size were docked," he says, "by grounding them at high water and then waiting for the tide to recede, work being proceeded with until the tide again rose. This method was improved upon by hollowing out a berth or small basin, and then, when the water was down, a temporary dam would be made across the entrance to the basin where the ship lay, so that work could go on uninterrupted by the rising tide. Here, then, we find the germ of the idea of a graving dock, the essential factor of which was the existence of the rise and fall of the tide, and it was due to the absence of tide that we owe the original floating dock. In the time of Peter the Great, the captain of a British ship, finding that his vessel, in Cronstadt harbor, was in want of docking, and that, owing to the absence of tide in the Baltic sea the then orthodox method was impracticable, obtained a hulk named the Camel and completely removed the whole of her decks and internal work, cut off one end and fitted it with a gate. He then berthed his ship inside the hollow hull of the Camel, closed the gate, and pumped the water from its interior. This is the very first instance on record of the use of a floating dock, and it was directly brought about by the absence of the hitherto essential tide. The almost tideless shores of the United States may be termed the nursery of the floating dock, and even to this day we find that there are twenty-three floating docks in the port of New York, and only five graving docks. Another natural feature favoring the growth of these docks in America is the extreme difficulty experienced in many ports in obtaining a good foundation for a graving dock; floating docks are quite independent of such considerations. A true floating dock may be described as a structure which utilizes its displacement for lifting a ship so much above its normal draught line as to bring the keel above the level of the water's surface. In the case of a graving dock the water is taken away from the ship, and in the case of a floating dock the ship is taken away from the water."

Consular Service and Shipping.

Another instance of the relation that the shipping question bears to that of increased exports was furnished at a recent dinner given by the Manufacturers' Club of Cincinnati to Charles Davis of the Davis & Egan Machine Tool Co., who has traveled widely during recent years.

"We have in this country," said Mr. Davis, "too much politics of all kinds, and mostly of the bad kind. For the last four years the business man of the United States, like Prometheus, has been chained to the rock, while the politicians were the vultures and gnawed at his vitals. Questions of vital importance to the commerce of the country, such as the improvement of internal waterways to float heavy products to the seaboard, subsidizing of American-built vessels, revision of the consular service, establishment of a bureau of manufactures—all these and others as weighty are tossed from one set of cheap politicians to another, without any of them being able to comprehend their true significance. The business men of the country must take a greater interest in politics. The movement should begin in municipal affairs, and extend to those that are national. The consular service of the United States is so far inferior to that of the leading countries of Europe that it has become in many cases merely a haven for incompetency. Pick up any daily paper; you will find that some played-out politician or some nobody that cannot make a living at anything else has been appointed to this or that country as consul. Neither by their training, experience nor what they have accomplished are they entitled to these positions. I went into a United States consul's office in one of the largest cities in Europe, armed with letters from the state department and the highest officials in the country, expecting to be furnished with the names of the leading importers of machinery from the United States in that city. Although the incumbent has been in office two years he said he did not know of any one doing any business of importance in that line. I knew of one firm myself that had imported over $1,000,000 worth of machinery in one year.

"As the decree has gone forth in the United States that we are not to have free ships, then we should have subsidized ones. They are cheap at any cost. It would create at once remarkable activity on our eastern and western seaboards, and new ship yards would spring up. This would cause an enormous demand for material that would be furnished by all parts of the country. There should no sectionalism in this. One part of the country cannot be full of business without all parts being benefited. We have been occupied in the past developing our land; let us now develop the ocean. Let the good old days come back when a boy's highest ambition was to go to sea. What our boys and young men want is opportunity. Let us create that opportunity. Let our surplus young men who are doing women's work in the stores come out from behind the ribbon and bargain counters and grapple with the real issue of life. Let us build up the grand race of American seamen; we had it in former days. Let the smoke of our steamers blacken every horizon. Let United States vessels flying the stars and stripes be seen in all the great ports of the world. These, gentlemen, constitute some of the great problems before us. The genius and enterprise of the American people will be equal to their solution."



Wooden steamer J. C. Gilchrist as she appeared sunk alongside a coal dock at Gladstone, Mich., in December last, after working through heavy ice.

Munn & Co., publishers, 361 Broadway, New York, have just issued a forty-eight-page reference catalogue to the Scientific American Supplement. The catalogue refers to over 10,000 of the more important articles on a wide range of subjects, largely of an engineering kind, that have appeared in the Supplement from commencement, Jan. 1, 1876, and the publishers announce that all of the back numbers of the journal can be had at 10 cents each. Back volumes can also be supplied, and should a reader of the catalogue desire to obtain information on any subject in addition to that scheduled, or should he fail to find articles wanted, papers bearing on the subject will be recommended. The Scientific American Supplement is a unique sixteen-page illustrated weekly journal containing no advertising. It is uniform in size with the Scientific American, but is distinctive in character. It extends and amplifies the work of the parent journal and embraces a very wide range of subjects, covering the most recent and valuable papers by leading writers in all the principal departments of science and useful knowledge. The catalogue will be furnished free upon application to Munn & Co.

Capt. Thomas D. Gibson, who was in command of the steamer E. C. Pope the fore part of last season, will sail the Selwyn Eddy for the same company the coming season.

South Chicago's Great Gain in Commerce.

In support of its claim for recognition from the present congress in the matter of harbor improvements, the Improvement Association of South Chicago will present figures to the river and harbor committee showing a greater gain in commerce during the past ten years than any port on the lakes, and probably greater than any port in the country. The increase is due largely to the development of the Illinois Steel Co.'s plant and to new grain elevator interests, as well as numerous manufacturing enterprises. Just now an effort is being made to secure an appropriation from congress for a fog signal at South Chicago, as it is found that in addition to the great amount of fog in that vicinity, vessels are also at a disadvantage in making port on account of smoke from the city. In support of their request for the fog signal the improvement association has submitted the following statement of commerce to officials of the light-house service:

ENTRANCES.

Year.	Chicago.		South Chicago.	
	Number of vessels.	Tonnage.	Number of vessels.	Tonnage.
1896	7154	4,787,250	1293	1 641,174
1895	7637	4 602,508	1404	1,682,003
1894	7318	4,328,685	747	798,236
1893	8011	4,892,530	497	505,626
1892	9073	4,798,241	1107	1,089,635
CLEARANCES.				
1896	7102	4,719,522	1450	1,817,866
1895	7687	4,585,834	1504	1,760,838
1894	7379	4,358,359	758	798,898
1893	8062	4,914,854	474	474.969
1892	9252	4,972,216	952	920,301
ENTRANCES IN 1888.				
1888	10,158	3,990,921	412	318,655

Showing an increase at Chicago of about 25 per cent.; at South Chicago, about 500 per cent.

Manufacturers and Shipping.

It is gratifying to find that the manufacturers of this country are beginning to understand that the shipping question is not one of partisan politics and that it is of first importance in the matter of export trade extension, to which they are now giving special attention. President Theodore C. Search of the National Association of Manufacturers made the shipping question a feature of his annual address before that body a few days ago.

"Outside of the comparatively few who are directly concerned as investors in the shipping of our country," said Mr. Search, "none have so large an interest as the manufacturers in the creation of American steamship lines. We are reaching out for foreign trade and we find our efforts obstructed by shipping interests that are inimical to our own. When we ship our goods to remote South American ports we find a combination of British lines operating under an understanding which stifles competition and leaves us no alternative as to routes or rates. If we wish to send a salesman to Venezuela, the nearest point in South America, and then to Rio or Buenos Ayres, we find that important ports naturally upon the same route are separated by two voyages across the entire Atlantic. To make the trip with reasonable comfort one must first go to La Guayra, then return to New York and proceed to Rio by way of England, thus traveling 11,500 miles to reach points that should be touched in a voyage of 5,000 miles. The solution of this problem must come through the efforts of the manufacturers of the United States. It is no longer the seaboard merchants and the vessel owners whose interests are at stake. It is a question that strikes hard upon the commercial and industrial interests of the nation in the far interior, as well as upon the coast. It is for the manufacturer, the merchant, the farmer, to say how much longer we shall be leaders of the world in our productive industry and followers of our weakest rivals in the foreign distribution of the goods we make."

Mr. Search favored the granting of more liberal mail subsidies, but said nothing of the policy of discriminating duties. He said that for every dollar's worth of our exports carried in our own ships seven dollars' worth were carried by British vessels, and only 11 per cent. of our total exports were carried by American vessels. He further showed that of sixteen leading steamship lines whose vessels cross the seas today not one is American. The establishment of a federal department of commerce and industry was advocated, as was the contruction of the Nicaragua canal and the extension of commercial reciprocity, for which great results were predicted at an early date. The need of international banking facilities, through which American manufacturers and exporters might transact business, was enlarged upon, and the necessity of reform in the consular service was also insisted upon by Mr. Search, who showed that since last March there has been a general shaking up in the consular service to the unquestioned disadvantage of American trade abroad.

Within the past three or four months the Magnolia Metal Co. of New York has received 2,827 testimonials. They are from every part of the United States and Canada, from railway companies, steamship companies, rolling mills, iron and steel manufacturers, machinists, paper mills, cotton mills, woolen mills, wood-working establishments, and, in fact, from representatives of every mechanical industry that can be mentioned. These testimonials were received in response to a circular sent out with a 15-inch rule, which was given with the compliments of the Magnolia company. The circular simply asked if the concerns addressed were users of Magnolia metal, and if so, what was their experience with it. It is estimated from the replies that at least 100,000 concerns in the United States and Canada are using Magnolia metal. Magnolia metal is a good article well advertised.

Ship Christenings.

When in Philadelphia, a few days ago, the Japanese man-of-war Kasagi was christened in the poetic manner which is employed in that land, namely, by letting loose a white dove as the name of the ship is pronounced over its bows, the ceremony was denounced from a town in the far interior as immoral heathenism. Our own race has always had a deep love for the sea and for ships. As far back as history or even tradition runs, ships have been looked at as living beings. A vessel is invariably referred to as "she," and never as "it," and, in fact, in the language of nearly every maritime nation the ship has sex and is a feminine creature. In the earliest times, when a ship was launched, the gods of the sea and the storm had to be placated, and a human being was slain upon the bow. In a second stage a sheep, goat or beeve was slaughtered. Even today Malay and Chinese pirates cut off the head of a chicken and allow the blood to flow over the cutwater. With the advent of Christianity these pagan forms were spiritualized, and the ship was christened and made into a Christian ship, in contradistinction to a heathen ship. In nearly all Roman Catholic countries a priest sprinkles holy water on it to bless it. This is done at the present time in Spain, Portugal, Italy and other Roman Catholic lands. Symbolism was carried to a still higher development by Venice, where the Doge, upon the Bucentaur, married the sea with a wedding ring. The Norse pirates built a fire on their ship, killed and roasted a sheep and threw pieces of the meat and ale or wine from their drinking horns into the water to let the gods know that a new craft of destruction had come into being. At the present time in the far east the Koreans, Chinese, and even the Anamites and Cambodians, paint an eye on either side of the bow of the ship so that the evil spirits of the sea, the storm and the night will see that the boat is looking at them. Our own practice of breaking a bottle of wine may come from the Norsemen, or it may be a survival of the old Latin practice of decorating the ship with vines and bunches of grapes and pouring a glass of wine on the deck into the water as an offering to Neptune.—New York Mail and Express.

As Common at Sea as on Shore.

Professor Thurston recently forwarded to one of the Scotch engineering societies a few notes intended to accompany the discussion of a paper on water tube boilers. He wrote that the whole question was one of particular interest to him, for the water-tube boiler had been familiar to him from its general introduction, a generation or more ago, and he had almost felt certain of its ultimate use, in substitution for the shell boiler. Experience in this country had been very satisfactory with the stationary water tube boiler, but much less so with the marine forms. There seemed no satisfactory reasons for so marked a difference in experience, and he was compelled to believe that after a little experience in handling them, and especially after the existing prejudice against them on the part of the men in charge had worn off, they would become as common at sea as on shore. Experience at sea with them was now passing through the friction-creating stage. If properly built, and maintained in good order by regular and wise repair, they practically never wore out and never endangered life or property. They stood hard driving, and to an extraordinary amount. They enormously economized weight and space, and had always seemed to him certain, in time, to displace the older types even at sea, where, indeed, they were particularly needed. Late experience with them lends additional confidence in their ultimate adaptation to even this trying duty, and if steam pressure continues to rise 50 per cent. per decade, it will not be long before they entirely supplant the shell boiler in all naval and long distance craft, and probably in all sea-going ships.

In referring recently to the stranding of the steamer Gogebic on North Manitou island late last fall, Capt. W. D. Neal spoke in terms of the highest praise of Capt. W. L. Andres and his crew of life-savers stationed on North Manitou island, and the valuable service rendered by them. To reach with their surfboat the point where the Gogebic lay stranded it was necessary to cut a roadway through a dense undergrowth of wood and proceed through snow averaging 2 feet in depth. After this had been accomplished the men worked incessantly until the steamer was released, notwithstanding the fact that their term of service for the season had expired before this could be accomplished. A better, braver or more willing crew is not to be found anywhere, Capt Neal asserts. Capt. Andres is now at Grand Haven.—Milwaukee Evening Wisconsin.

Mr. C. P. Huntington visited Newport News a few days ago and a dispatch from that city quotes him as saying that he will shortly build there another dry dock that will be the largest in American waters—a basin in which any ship of the United States or England can be safely docked and overhauled.

Mr. E. Platt Stratton, chief engineer-surveyor for the Record of American and Foreign Shipping, has made a special study of water tube boilers during a great number of years past, and it is now announced that he is about to introduce a new boiler of this type.

U. S. ENGINEER OFFICE, Duluth, Minn., January, 31, 1898. Sealed proposals for dredging in Portage Lake Ship Canals, Keweenaw Point, Mich., will be received here until noon, February, 28, 1898, and then publicly opened. Information furnished on application.
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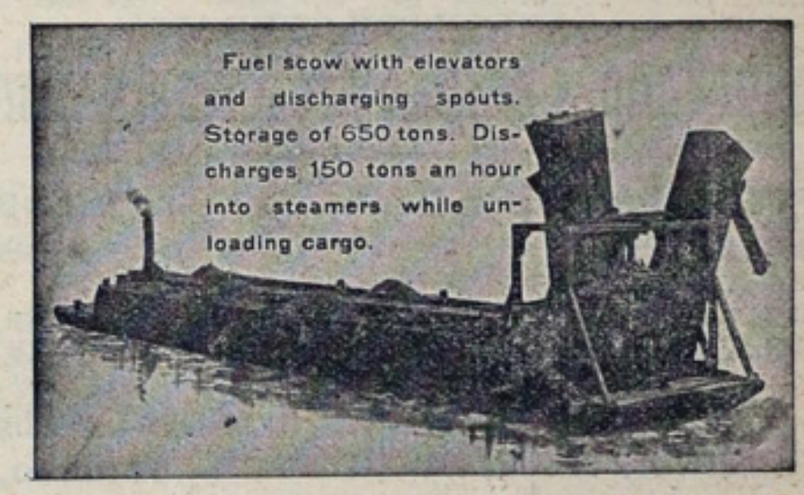
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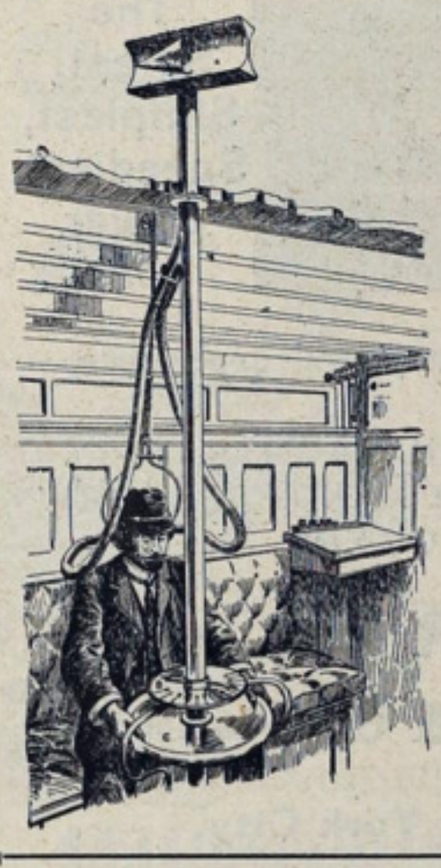

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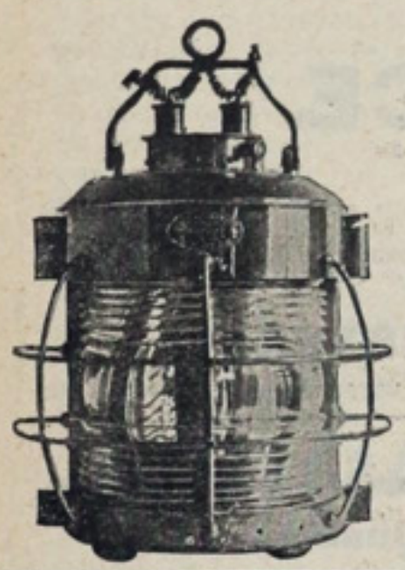

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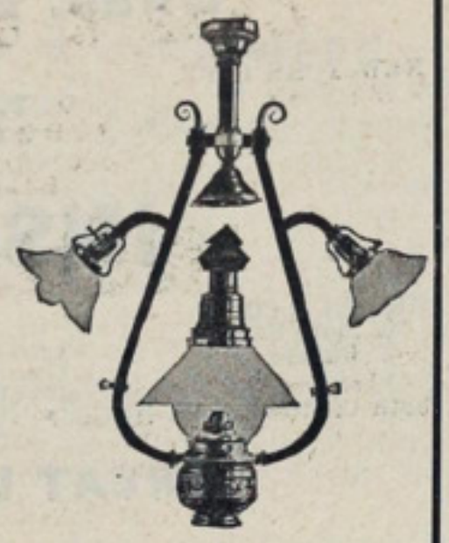

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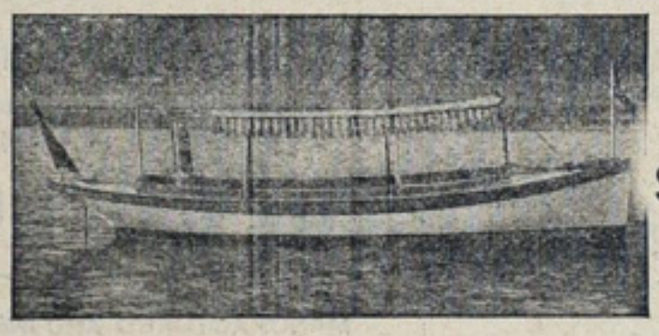

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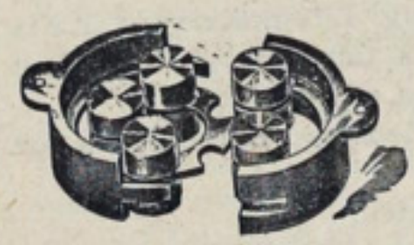

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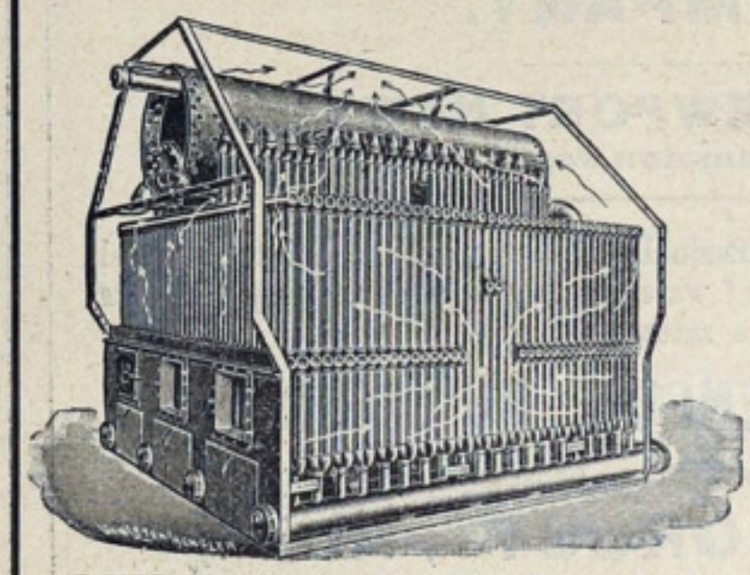

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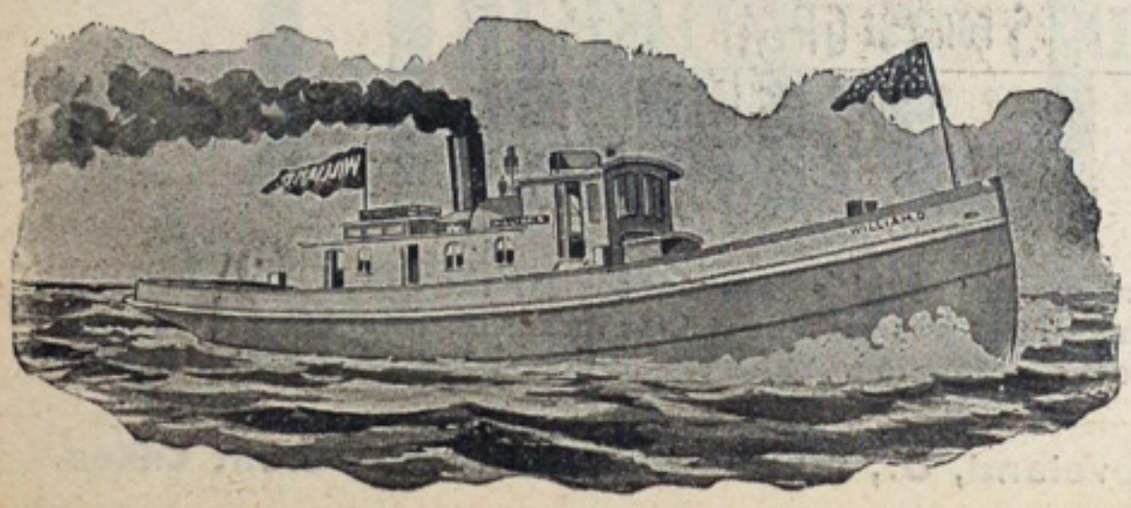

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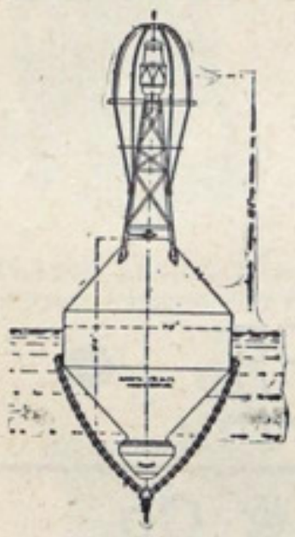

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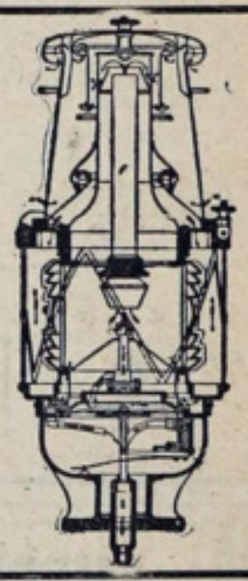

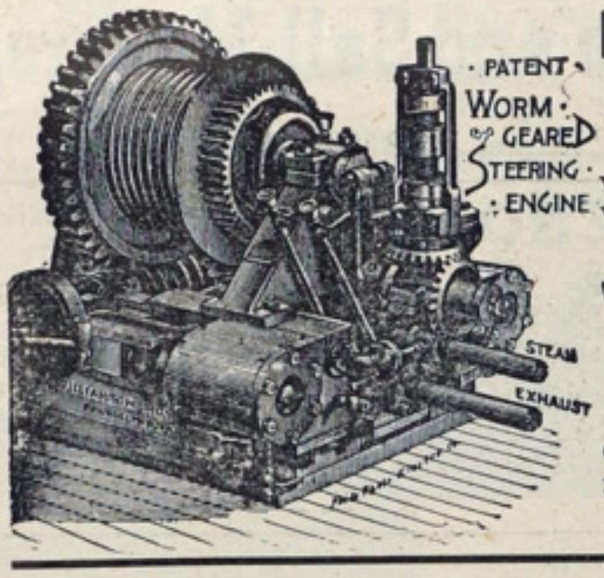

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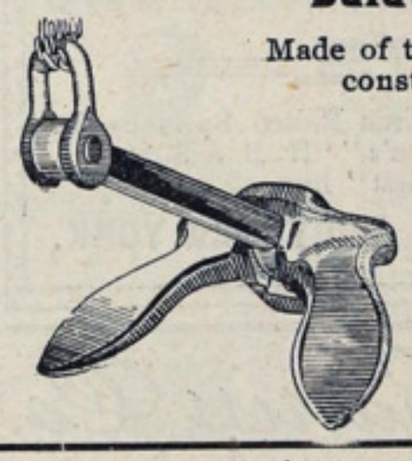

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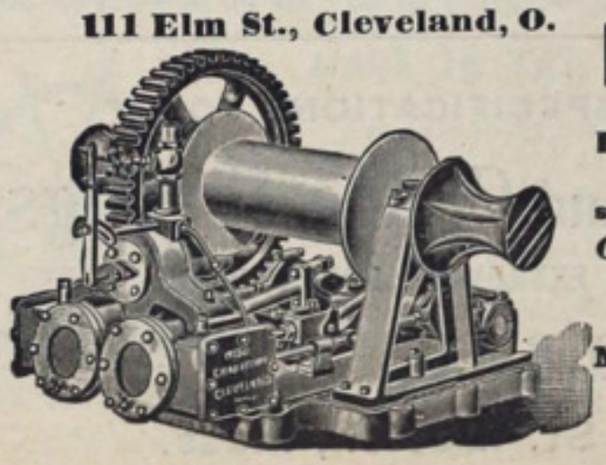

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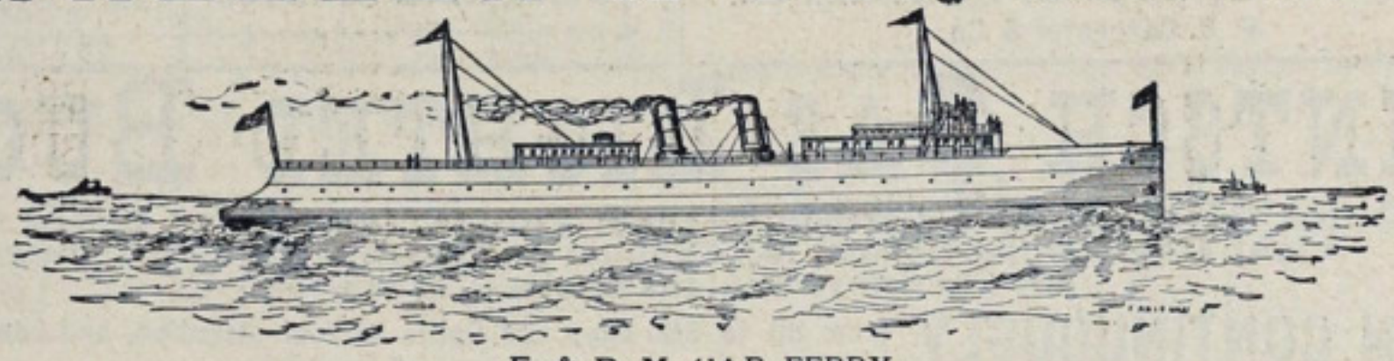

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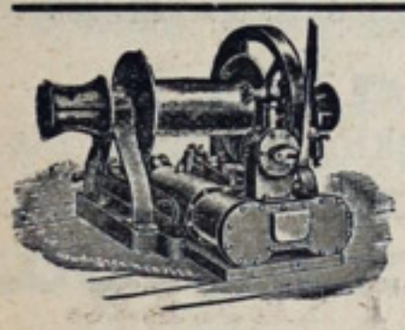

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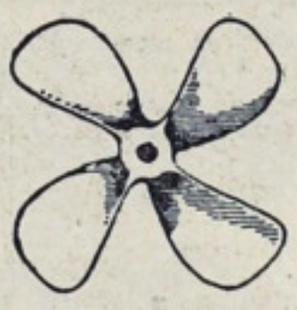

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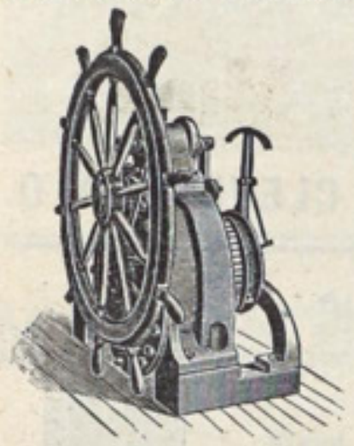

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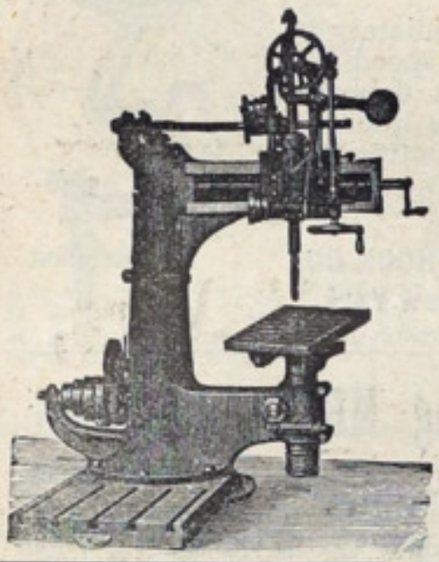

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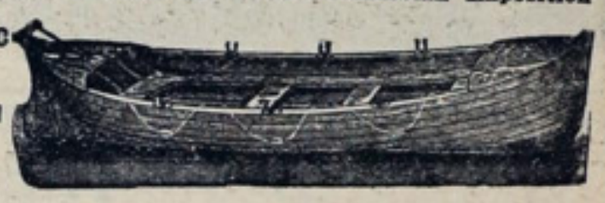

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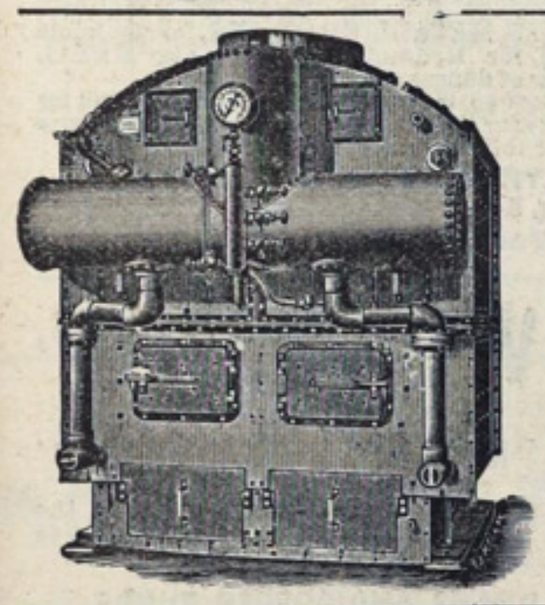

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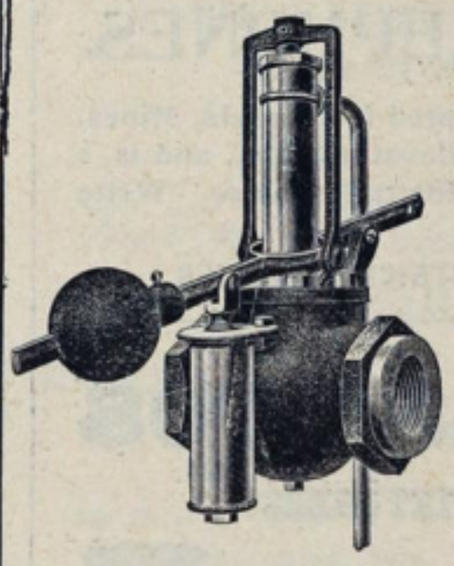

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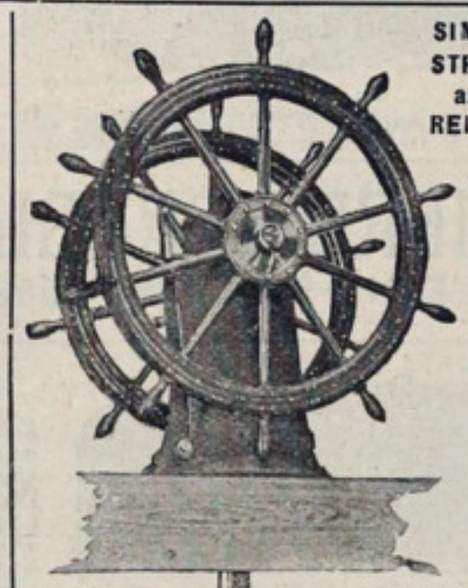

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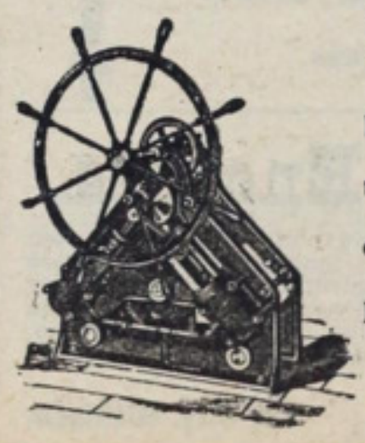

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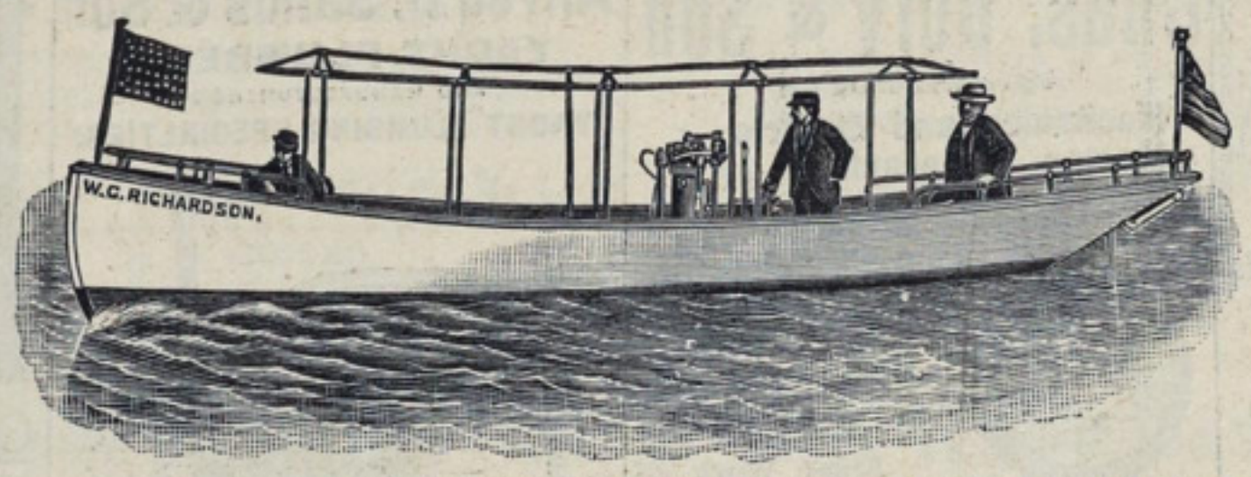

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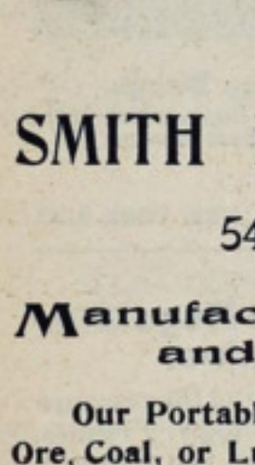

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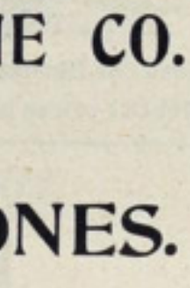

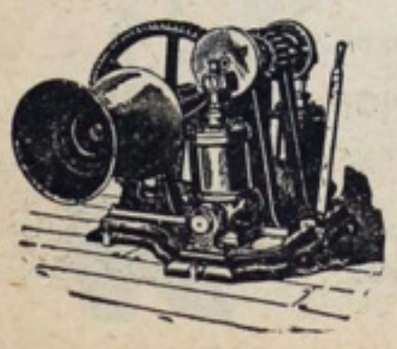

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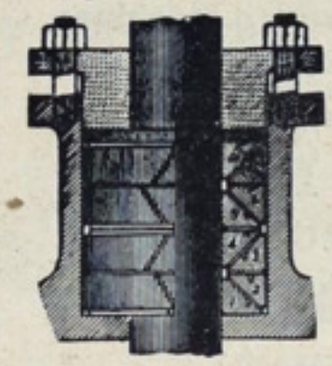

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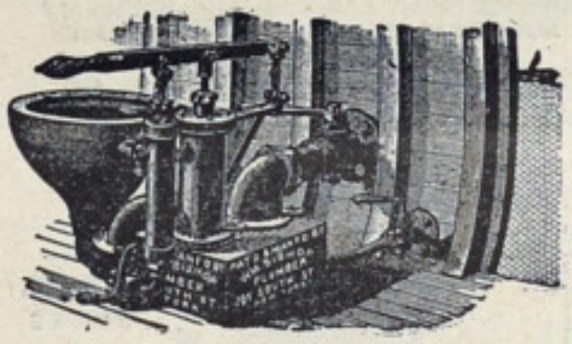

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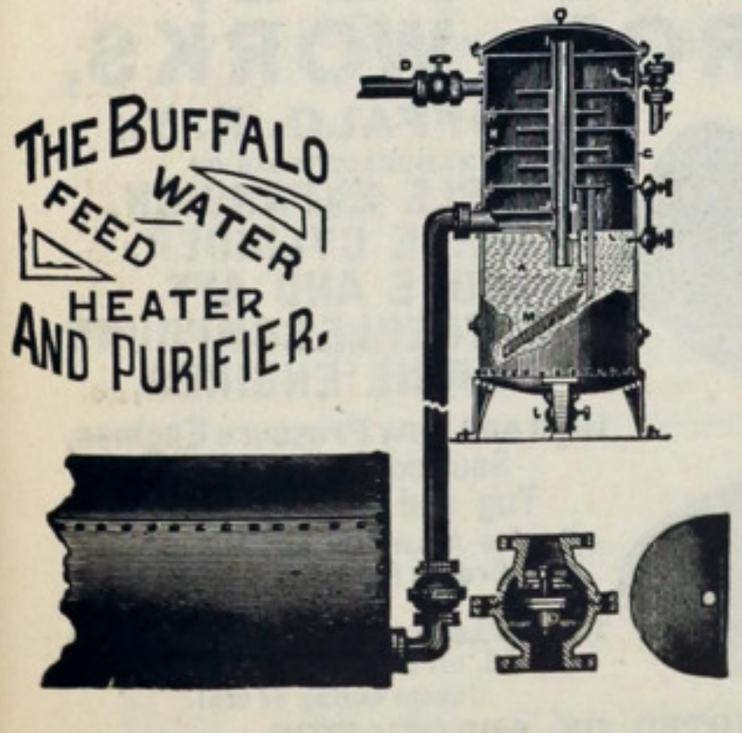

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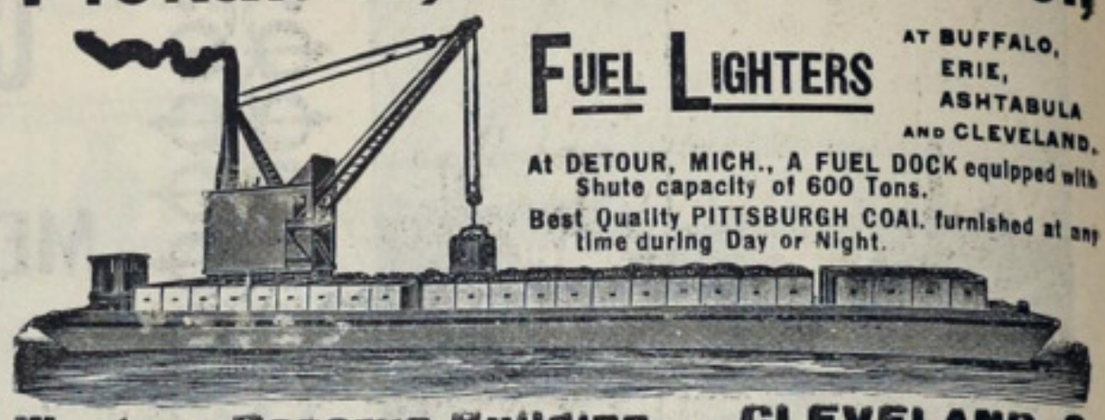

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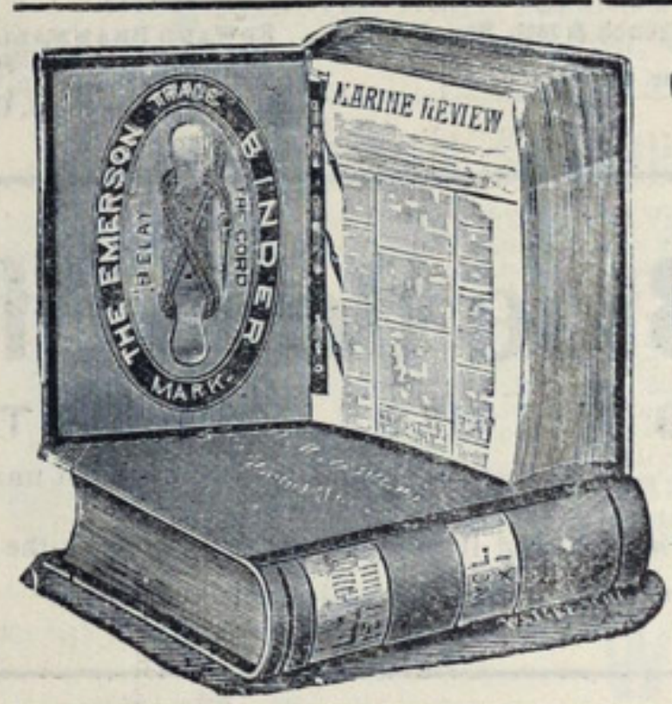

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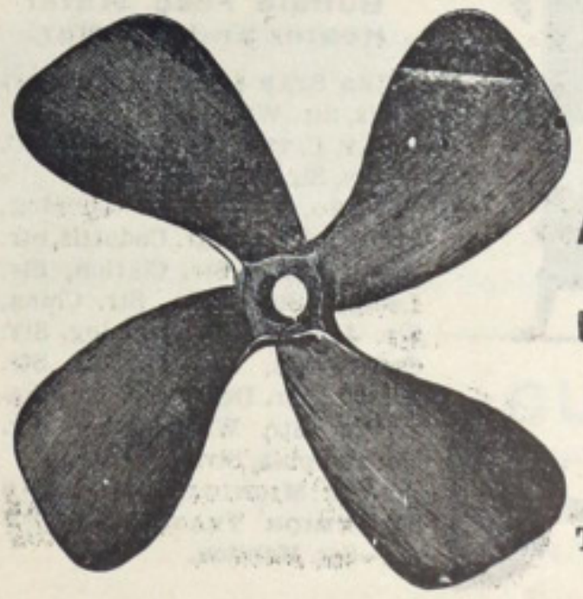

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PRICES QUOTED ON APPLICATION.

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TOTAL INSTALLATIONS THROUGHOUT THE WORLD

623 STEAMERS--1,600,000 HORSE POWER.

TOTAL INSTALLATIONS ON THE LAKES BY THE

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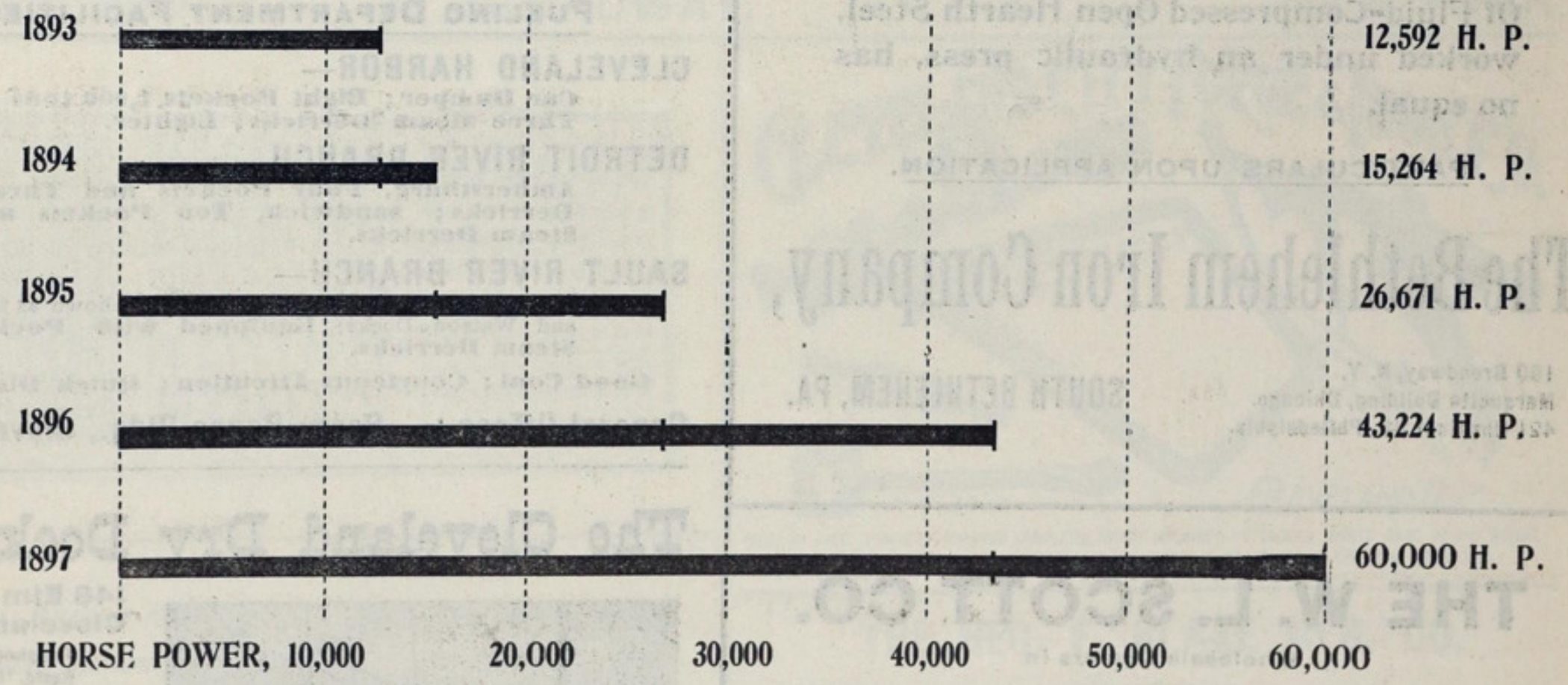
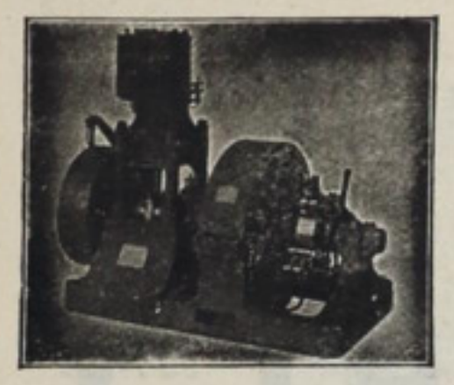
50 STEAMERS--60,000 HORSE POWER.

Diagram showing the increase of HOWDEN equipments on the lakes for the first five years.



At this rate of increase all the principal steamers of the lake business fleet will be equipped in ten years.

Why not have the benefit of the economy of this draft next season by giving your order for an equipment now.



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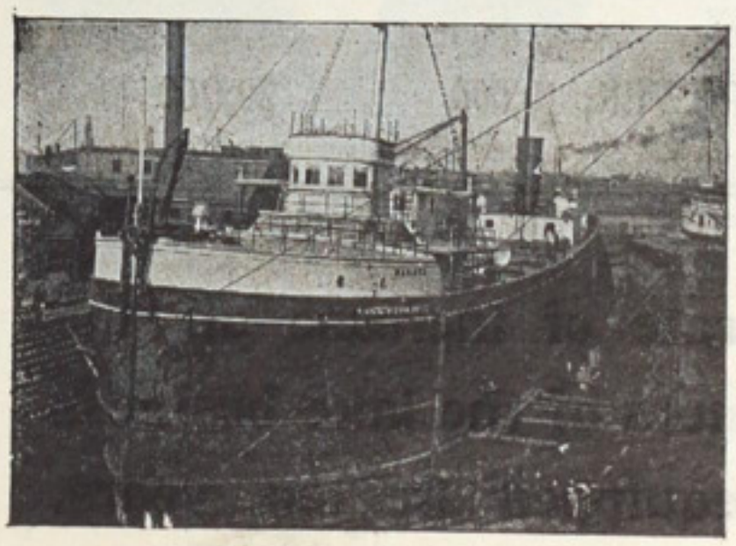

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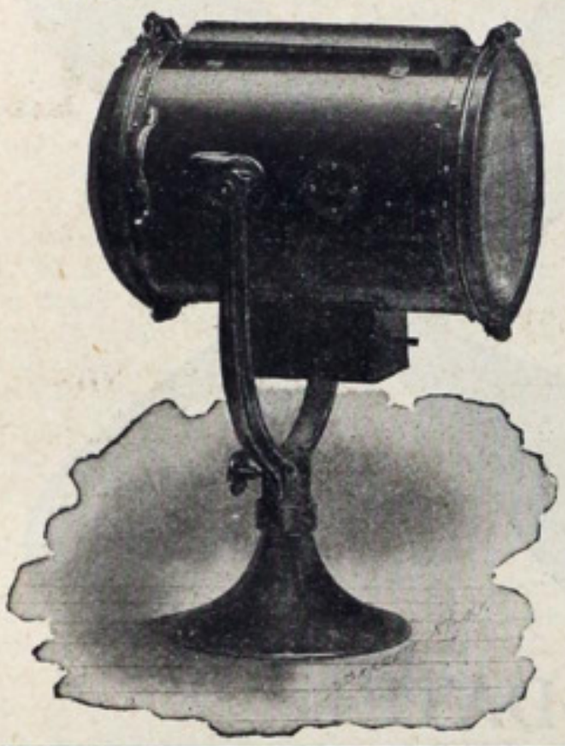

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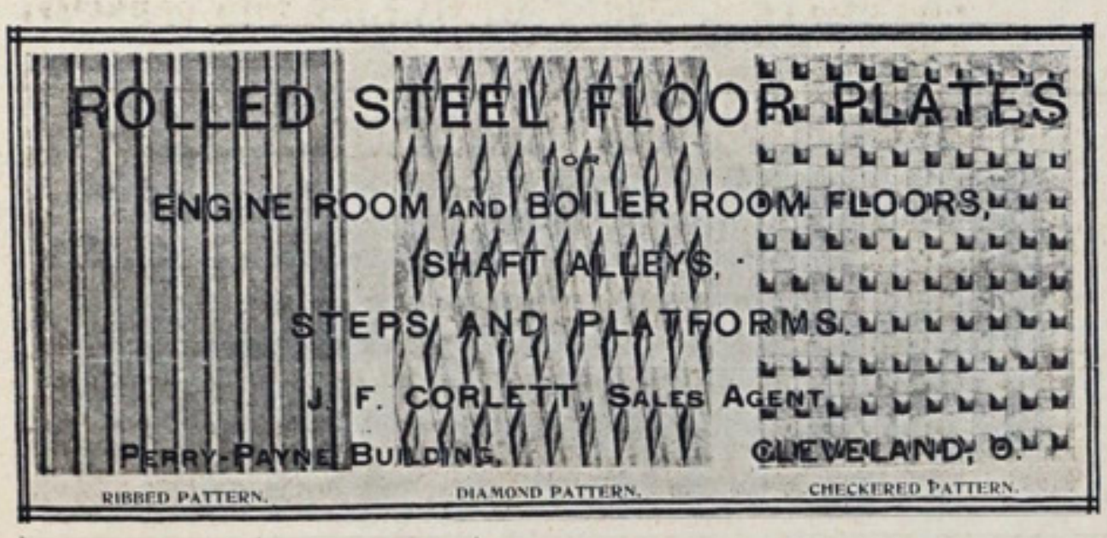

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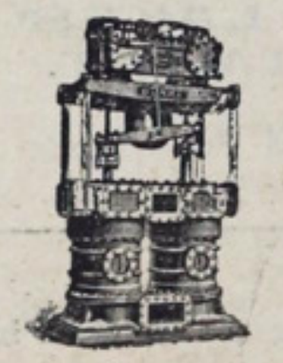

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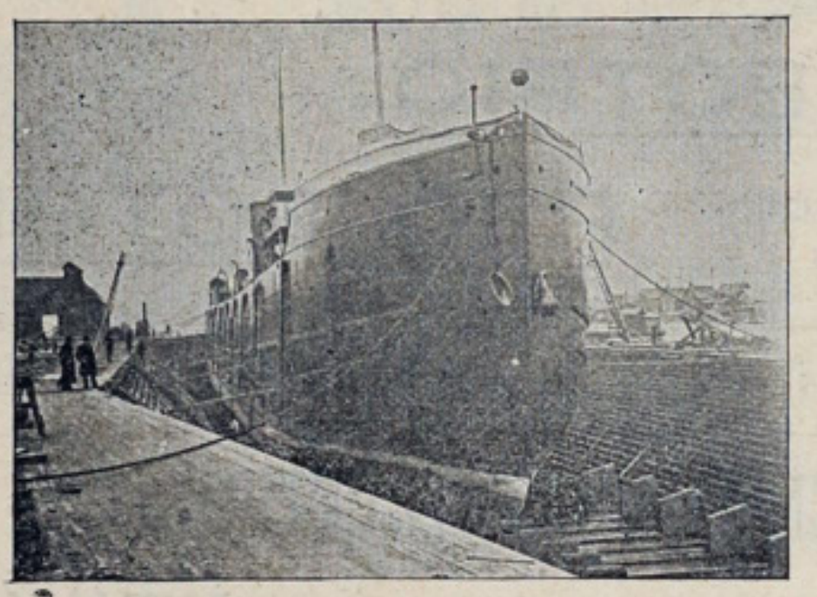

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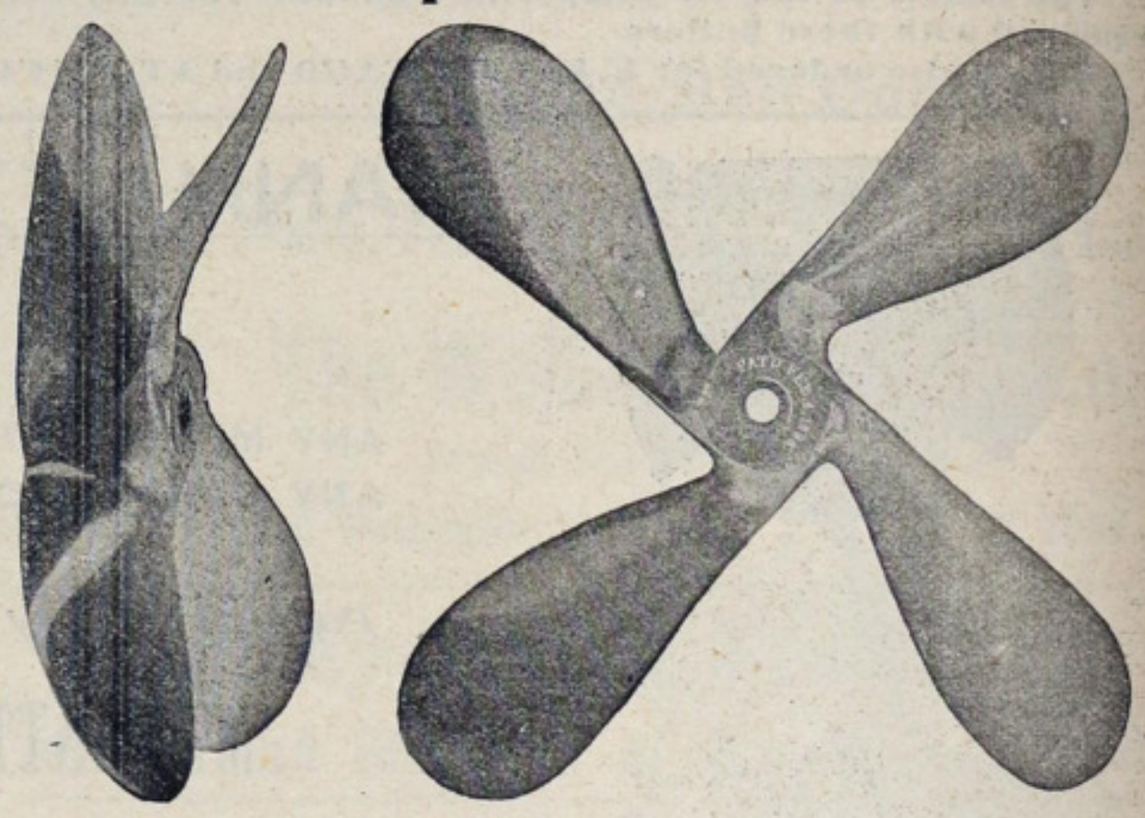

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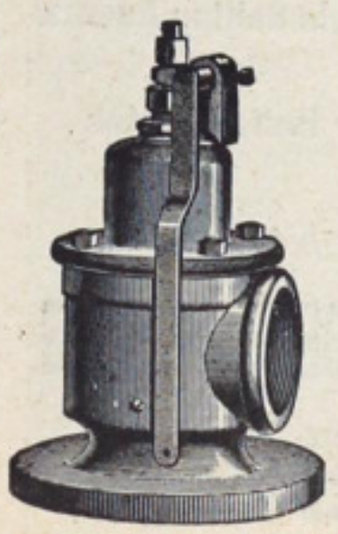

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